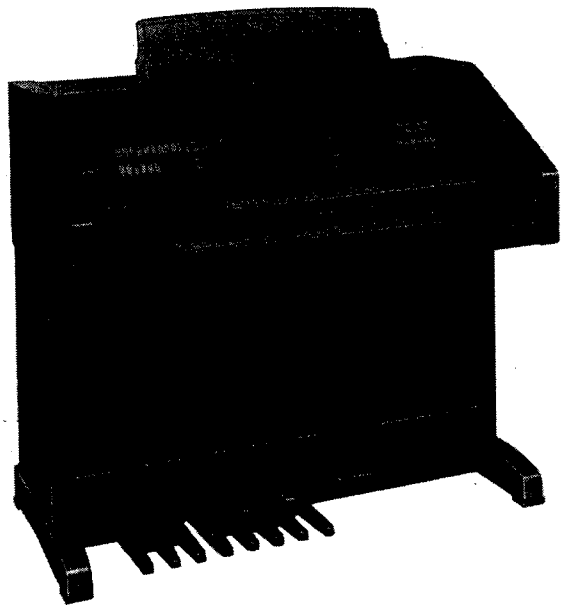
ORDER NO. EMID981698

Service Manual

Electronic Organ

SX-G100C

(EH), (EZ)



AREAS

(EH): Belgium
(EZ): Germany

The SX-G100C is the same as the SX-GA3 with some modifications. This Service Manual covers only those parts which have been modifide from the SX-GA3. For other parts, refer to the SX-GA3 Service Manual (Order No. EMID941513), it's Supplement-1/2/3/4 (EMID941542, EMID941545, EMID971635, EMID971670) and Technical Information (EMID971681). Please keep this manual with and use it in conjunction with the SX-GA3 Service Manual and Supplements.

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

■ Specifications

KEYBOARD			UPPER KEYBOARD: 49 KEYS, LOWER KEYBOARD: 49 KEYS PEDAL KEYBOARD: 13 KEYS, FULL BASS PEDAL
SOUND GENERATOR			PCM
MAXIMUM NUMBER OF NOTES PRODUCED SIMULTANEOUSLY			ORGAN PART 64 NOTES/ALL OTHER PARTS 64 NOTES
SOUNDS	ORCHESTRAL CONDUCTOR (UPPER/LOWER)		ORGAN, SOUND 1, SOUND 2, SOUND 3
	SOUND GROUP (UPPER/LOWER)		200 SOUNDS GROUPS: PIANO, E PIANO/HARPSI, GUITAR, STRINGS/VOCAL, BRASS, FLUTE, MALLET, SPECIAL PERC, REED, SAX/CLARINET, SYNTH BRASS/LEAD, SYNTH PAD
	ORGAN	TYPE	10 TYPES GROUPS: ELECTRONIC TABS, DRAWBARS, PIPE ORGAN
		TAB	UPPER: 16', 5-1/3', 8', 4', 2-2/3', 2', 1-3/5', 1-1/3', 1', 4' PERC, 2-2/3' PERC LOWER: 8', 4', 2-2/3', 2', 1-1/3', 1'
	BASS PEDALS		63 SOUNDS GROUPS: ORGAN, CLASSICAL ORGAN, STANDARD, ORCHESTRAL, CONTEMPORARY
EFFECTS	TREMOLO		UPPER/LOWER ORGAN (SLOW/FAST)
	EFFECT		UPPER/LOWER ORGAN

Technics

© 1998 Matsushita Electric Industrial CO., LTD. All rights reserved. Unauthorized copying and distribution is a violation of law.

EFFECT	SUSTAIN	UPPER/LOWER ORGAN, UPPER/LOWER SOUND GROUP, BASS PEDALS
	DIGITAL EFFECT	UPPER/LOWER SOUND GROUP, BASS PEDALS
	DSP EFFECT	UPPER/LOWER SOUND GROUP
	BRILLIANCE	UPPER/LOWER SOUND GROUP, BASS PEDALS
	DIGITAL REVERB	○
TRANSPOSE		G-C-F#
RHYTHM		140 RHYTHMS GROUPS: BIG BAND/SWING, COUNTRY, MARCH/WALTZ, U.S.TRAD, SHOW TIME, ORGAN/NOVELTY, STANDARD LATIN, BALLAD/POP, TRAD DANCE, MODERN DANCE, JAZZ COMBO, PARTY/WORLD, ROCK/BLUES, POP LATIN
CONTROLS		MAIN VOLUME, BALANCE, U/L ORGAN TYPE, START/STOP, INTRO & ENDING, FILL IN 1, 2, VARIATION, COUNT INTRO, SYNCHRO & BREAK, TEMPO/PROGRAM
KEYBOARD PERCUSSION		○
BACKGROUND SOUND		BIRD, WAVE, RAIN, CHURCH BELL, APPLAUSE
AUTO PLAY CHORD		ONE FINGER, FINGERED, PIANIST, MEMORY, DYNAMIC ACCOMP
EASY PLAY STYLE		ONE TOUCH ORGAN, ORGAN STYLIST, ONE TOUCH PLAY/MUSIC STYLE SELECT, MUSIC STYLE ARRANGER
TECHNI-CHORD		○
PANEL MEMORY		SET, 1-16
SEQUENCER		16 TRACKS STORAGE CAPACITY: APPROX. 28,000 NOTES INPUT MODES: EASY RECORD, REALTIME RECORD, STEP RECORD FUNCTIONS: PUNCH RECORD, TRACK ASSIGN, EXPRESSION SETTING, AFTER TOUCH SETTING, EDIT (SONG CLEAR, TRACK CLEAR, TRACK MERGE, QUANTIZE, MEASURE ERASE, MEASURE COPY, MEASURE DELETE, MEASURE INSERT, VELOCITY CHANGE), PLAY, MEDLEY
COMPOSER		5 PARTS: ACCOMP 1, 2, 3, BASS, DRUMS STORAGE CAPACITY: APPROX. 8600 NOTES INPUT MODES: REALTIME RECORD, STEP RECORD FUNCTIONS: MODE SELECT, PATTERN COPY, LOAD SINGLE COMPOSER PATTERN MEMORY: 2 BANKS × 6
DISK DRIVE		3.5 inch DISK DRIVE FOR 2HD, 2DD FUNCTIONS: DISK SAVE, DISK LOAD, MIDI FILE SAVE, MIDI FILE LOAD, DISK FORMAT, LOAD SINGLE COMPOSER PATTERN, LOAD SINGLE SOUND MEMORY
SOUND		PART SETTING (PAN, SUSTAIN, REVERB, DSP EFFECT, BRILLIANCE, VOLUME, KEY SHIFT, TUNING, BEND RANGE, ASSIGN MODE), TECHNI-CHORD TYPE, TREMOLO SPEED, MASTER TUNING, REVERB SETTING, GLIDE SETTING
MEMORY & CONTROL		INITIAL, SWITCH ASSIGN, POWER ON MODE, PANEL MEMORY MODE, MUSIC STYLE ARRANGER MODE, OUTPUT SETTING
SOUND EDIT		EASY EDIT, GENERAL EDIT (OCTAVE SHIFT, VIBRATO, AUTOBEND & TRILL, MODULATION, DISTORTION, GLIDE, SUSTAIN MODE, AFTER TOUCH), TONE EDIT (TONE LEVEL, ENVELOPE, ENVELOPE KEY FOLLOW, FILTER), EFFECT EDIT MEMORY: 2 BANKS × 18 (UPPER/LOWER) 1 BANK × 16 (BASS)
MIDI		MIDI PRESET, BASIC CHANNEL, CONTROL MESSAGE, REALTIME MESSAGE, COMMON SETTING & PANEL MEMORY OUTPUT, OCTAVE SHIFT & LOCAL ON/OFF, INPUT SETTING, OUTPUT SETTING, SYSEX BULK DUMP, GENERAL MIDI
DISPLAY		LCD (320 × 240 DOTS) CONTRAST, EXIT, DISPLAY HOLD
HELP		○
DEMO		○
LIGHT		○
TERMINALS		PHONES 1, 2, SEPARATED LINE OUT (ORGAN, BASS DRUMS), LINE OUT (R/R+L, L), AUX IN (R/R+L, L), MIDI (IN, OUT, THRU), MIC
OUTPUT		320 W
SPEAKERS		30 cm × 2, 16 cm × 2, 6.5 cm × 2 MONITOR (13 cm × 6 cm) × 2
POWER REQUIREMENT		830 W AC230-240 V 50/60 Hz
DIMENSIONS (W × H × D)		124.6 cm × 128 cm × 68.3 cm (49-1/16" × 50-13/32" × 26-7/8")
NET WEIGHT WITHOUT BENCH		113 kg (249.1 lbs.)

•Specifications are subject to change without notice for further improvement.

Principal modifications from the SX-GA3

Wiring parts: Some wiring parts have been modified in accordance with the modification of the cabinet.

MAIN circuit: The programmed ROMs have been modified. The part number of the **MAIN** P.C.B. has been changed also.

ACP circuit: The part numbers of the coils and the capacitors have been changed. The part number of the **ACP** P.C.B. has been changed also.

For these modifications, please refer to "MODIFICATION" on page 9.

WARNING

To prevent the risk of fire, smoke, or electrical shock and to ensure safe operation, please be sure to follow the safety guidelines below.

1. At places where special caution is required, the necessary safety precautions are clearly labeled or printed, for example, on the cabinet, or on the part concerned. Please follow these safety precautions, and also those listed in the Owner's Manual.

2. Parts which have a ⚠ mark in the circuit diagram or in the parts list are essential for safety. When replacing these parts, be sure to use only the specified parts.

3. Use the specified types for internal wiring (double-insulated wiring, etc.).

4. When replacing parts on the AC primary side (power transformer, electric switch, electrical cord, noise-prevention condenser, etc.), wind the lead wire and secure it by soldering.

5. Do not let the wiring come into contact with heat-emitting devices (fuse resistor, radiator plate, etc.).

6. When replacing the wiring, make sure that it is not in contact with the unfinished or rough edge of a part.

7. When replacing the power cord (except for the plug-in type), tug it from various directions to confirm that it does not slip out of place.

8. Spacing
   If soldering was done on the AC primary circuit, confirm that the interval between the soldered terminals or between the terminal and surrounding metallic parts is at least the minimum required (between the primary circuit and the chassis: at least 6.5 mm; between primary circuit terminals: at least 4.0 mm; between primary circuit terminals and secondary circuit terminals: at least 6.5 mm).

CONTENTS

■ **SERVICE INFORMATIONS**

INITIAL SETTING 2
PARTS LOCATION 3
HOW TO ASSEMBLE 4
DISASSEMBLY INSTRUCTIONS 5
MODIFICATIONS 9

■ **REPLACEMENT PARTS LIST**

CABINET PARTS LOCATION 10
CABINET/CHASSIS PARTS 14
PACKING 16

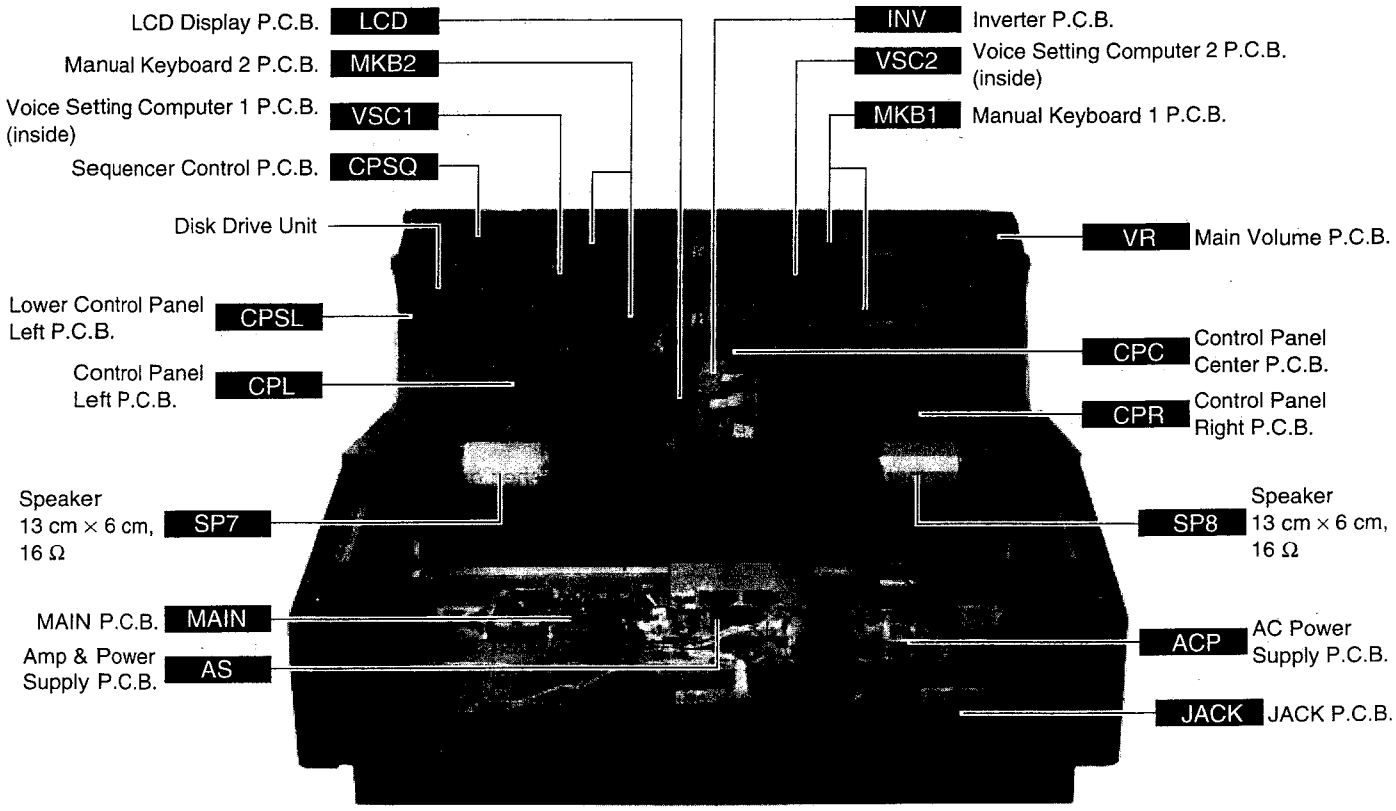
INITIAL SETTING

The following procedure resets all programmable settings, functions and memories to their initialized (factory-preset) status. Use this procedure if the buttons, keys, etc. malfunction, or when you wish to reset the memories and functions.

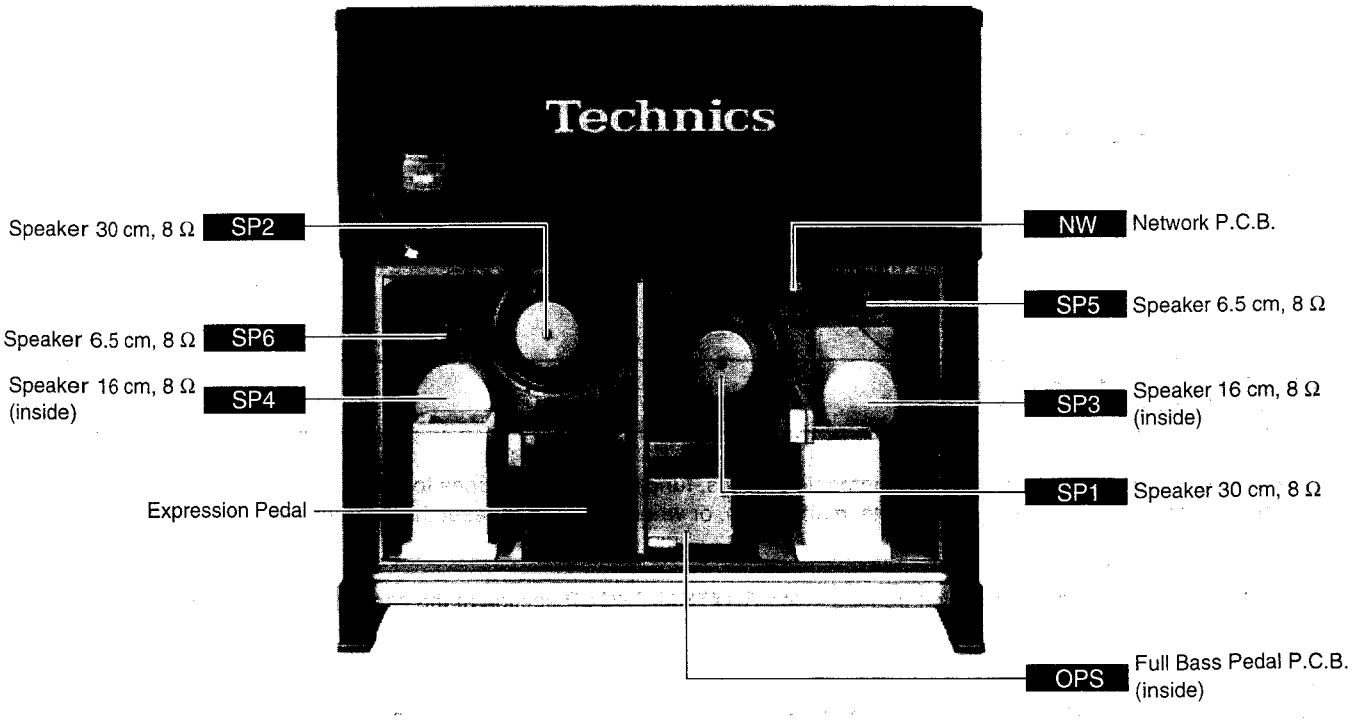
1. Turn off the **POWER** button.
2. While pressing the three lower left buttons in the **RHYTHM GROUP** section at the same time, turn the **POWER** button on again.

NOTE:
All stored data in the **SEQUENCER** and **COMPOSER** and other user settings will be deleted with this operation.

PARTS LOCATION


LCD Display P.C.B. LCD
Manual Keyboard 2 P.C.B. MKB2
Voice Setting Computer 1 P.C.B. (inside) VSC1
Sequencer Control P.C.B. CPSQ
Disk Drive Unit
Lower Control Panel Left P.C.B. CPSL
Control Panel Left P.C.B. CPL
Speaker 13 cm × 6 cm, 16 Ω SP7
MAIN P.C.B. MAIN
Amp & Power Supply P.C.B. AS
INV Inverter P.C.B.
VSC2 Voice Setting Computer 2 P.C.B. (inside)
MKB1 Manual Keyboard 1 P.C.B.
VR Main Volume P.C.B.
CPC Control Panel Center P.C.B.
CPR Control Panel Right P.C.B.
Speaker 13 cm × 6 cm, 16 Ω SP8
ACP AC Power Supply P.C.B.
JACK JACK P.C.B.

[Photo-1]

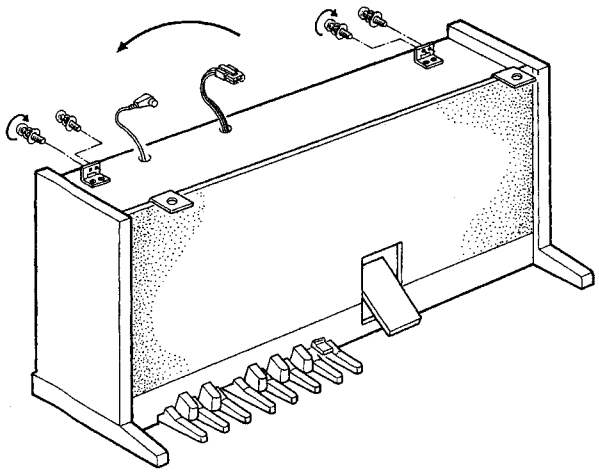

Technics
Speaker 30 cm, 8 Ω SP2
Speaker 6.5 cm, 8 Ω SP6
Speaker 16 cm, 8 Ω (inside) SP4
Expression Pedal
NW Network P.C.B.
SP5 Speaker 6.5 cm, 8 Ω
SP3 Speaker 16 cm, 8 Ω (inside)
SP1 Speaker 30 cm, 8 Ω
OPS Full Bass Pedal P.C.B. (inside)

[Photo-2]

HOW TO ASSEMBLE

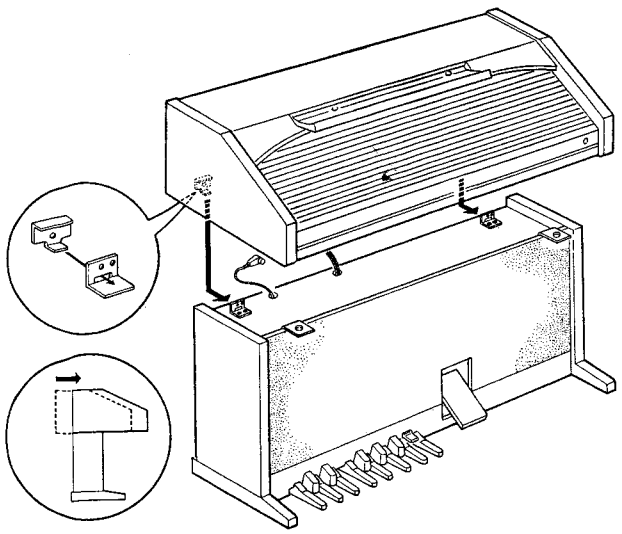
To prevent the upper cabinet from falling, secure it firmly with the screws.

1 Remove the four screws from the metal brackets on the lower unit. Lay the cords so they hang down over the back of the unit.



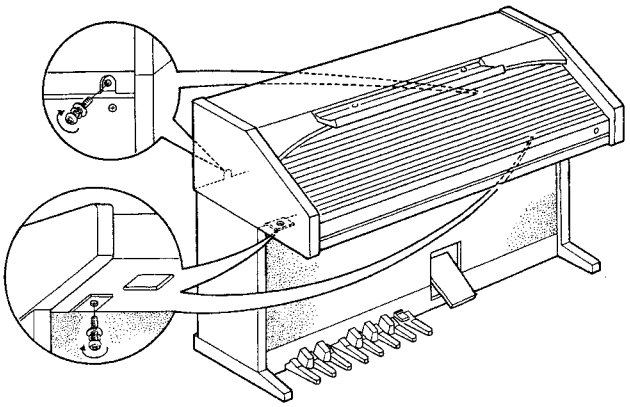
[Fig.1]

2 Position the upper cabinet on top of the lower unit, fitting the metal projections on the upper cabinet into the holes of the metal brackets on the lower unit.



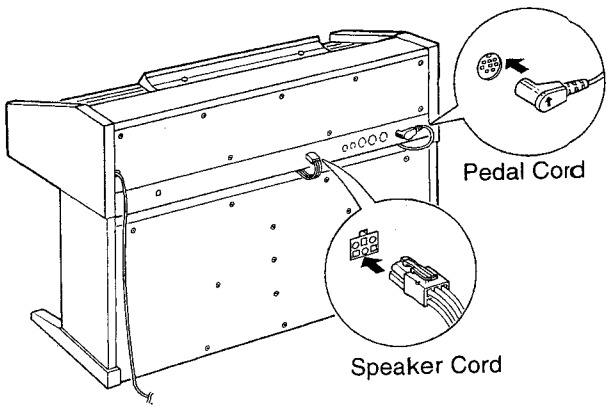
[Fig.2]

3 Use the four screws removed in step 1 to affix the upper cabinet to the lower unit. Screw them in loosely at first, making sure that they fit correctly in the holes. Then tighten them securely, ensuring that they are not crooked.



[Fig.3]

4 Connect the two cords from the lower unit to the terminals on the upper unit.

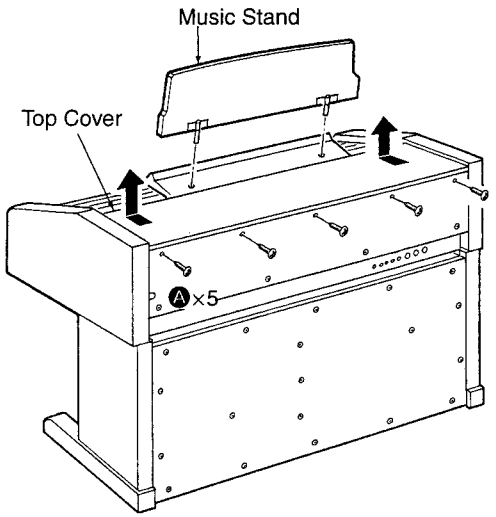


[Fig.4]

DISASSEMBLY INSTRUCTIONS

1 Removing the top cover

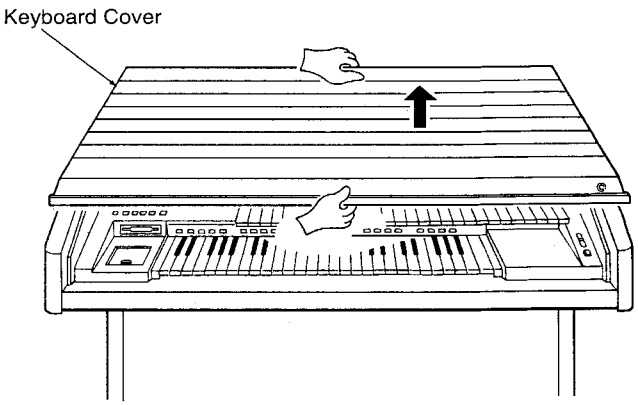
1. Remove the music stand by lifting it up.
2. Remove the top cover mounting screws (Ⓐ 5 pcs.).
3. Slide the top cover forward and lift up (as shown by the arrows).



[Fig.5]

2 Removing the keyboard cover

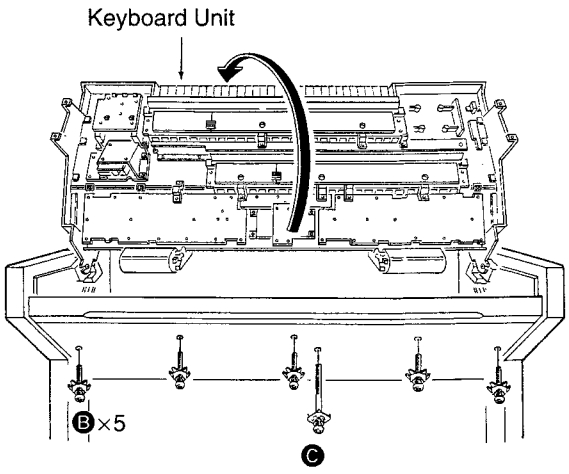
1. Remove the top cover (see step 1).
2. Remove the keyboard cover in its fully closed position.



[Fig.6]

3 Opening the control panel with keyboard unit

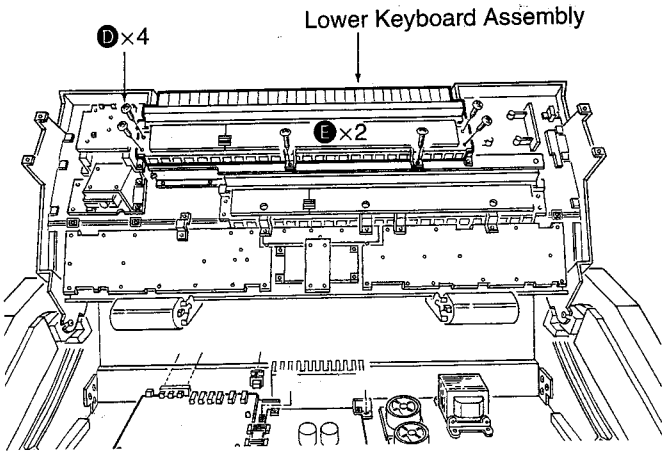
1. Remove both top cover and keyboard cover (see step 1 and 2).
2. Remove the control panel mounting screws located on the bottom of the cabinet (Ⓑ 5 pcs. and Ⓒ 1 pc.).
3. The control panel with keyboard unit can be opened upward.



[Fig.7]

4 Removing the lower keyboard assembly

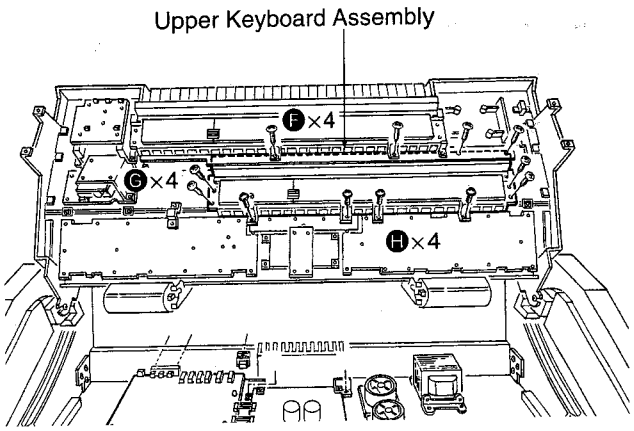
1. Open the control panel with keyboard unit (see step 3).
2. Remove the lower keyboard assembly mounting screws (Ⓓ 4 pcs. and Ⓔ 2 pcs.).
3. The lower keyboard assembly can be removed.



[Fig.8]

5 Removing the upper keyboard assembly

1. Open the control panel with keyboard unit (see step 3).
2. Remove the upper keyboard assembly mounting screws (Ⓕ 4 pcs., Ⓖ 4 pcs. and Ⓗ 4 pcs.).
3. The upper keyboard assembly can be removed.

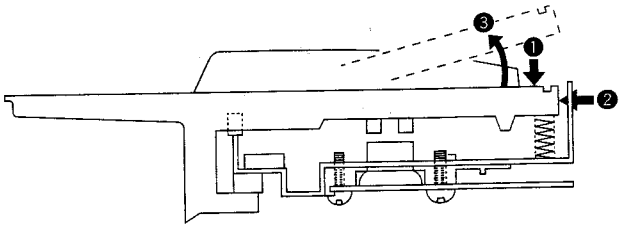


[Fig.9]

6 Removing the key(s)

1. Remove the keyboard assembly (see step 4 or 5).
2. Press downward on the rear of the key (❶).
3. While pressing downward on the rear of the key, push the key forward and release it from the chassis (❷).
4. Lift the key and remove it from the chassis (❸).

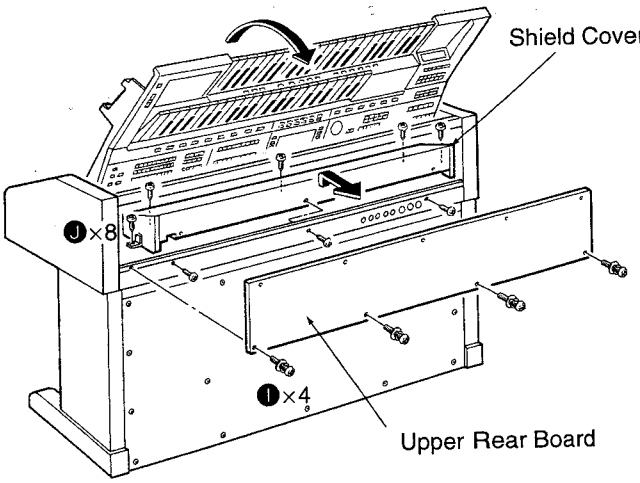
NOTE:
If a black key is to be replaced, it is necessary to remove the white key to either side of it first.



[Fig.10]

7 Removing the shield cover

1. Open the control panel with keyboard unit (see step 3).
2. Remove the upper rear board mounting screws (❶ 4 pcs.).
3. Remove the shield cover mounting screws (❾ 8 pcs.).
4. Remove the shield cover toward the rear.



[Fig.11]

8 Removing the MAIN, AS and ACP P.C.B.s

- Remove the shield cover (see step 7).

MAIN P.C.B.

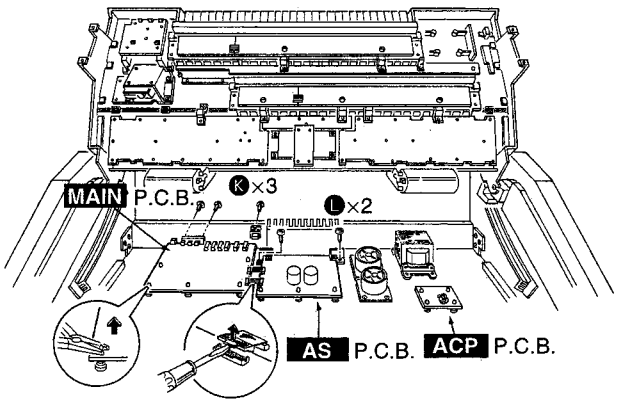
1. Remove the MAIN P.C.B. mounting screws (K 3 pcs.).
2. Release the claws of 5 P.C.B. holders.

AS P.C.B.

1. Remove the AS P.C.B. mounting screws (L 2 pcs.).
2. Release the claws of 3 P.C.B. holders.

ACP P.C.B.

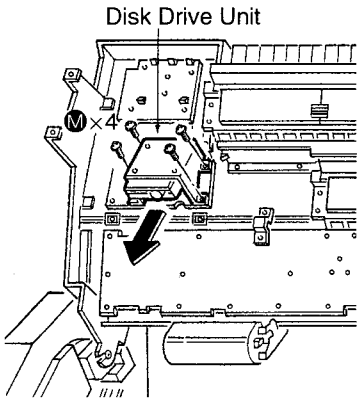
- Release the claws of 4 P.C.B. holders to remove the ACP P.C.B.



[Fig.12]

9 Removing the disk drive unit

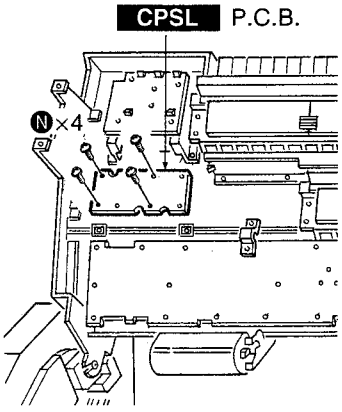
1. Open the control panel with keyboard unit (see step 3).
2. Remove the disk drive unit mounting screws (M 4 pcs.).



[Fig.13]

10 Removing the CPSL P.C.B.

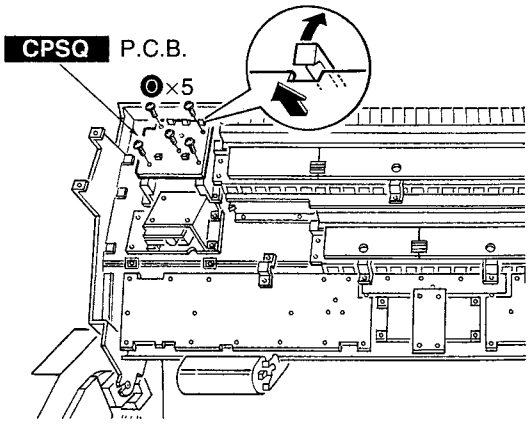
1. Open the control panel with keyboard unit (see step 3).
2. Remove the disk drive unit (see step 9).
3. Remove the CPSL P.C.B. mounting screws (N 4 pcs.).



[Fig.14]

11 Removing the CPSQ P.C.B.

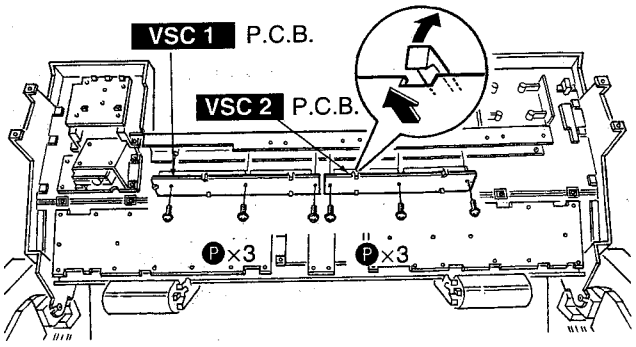
1. Open the control panel with keyboard unit (see step 3).
2. Remove the CPSQ P.C.B. mounting screws (O 5 pcs.).
3. Release the claws of 5 P.C.B. holders.



[Fig.15]

12 Removing the VSC 1 and 2 P.C.B.s

1. Open the control panel with keyboard unit (see step 3).
2. Remove the upper keyboard assembly (see step 5).
3. Remove the VSC 1 and 2 P.C.B.s mounting screws (P 6 pcs.)
4. Release the claws of 9 P.C.B. holders.



[Fig.16]

13 Removing the speakers

- Remove the lower rear board mounting screws (Q 19 pcs.).

30 cm speakers

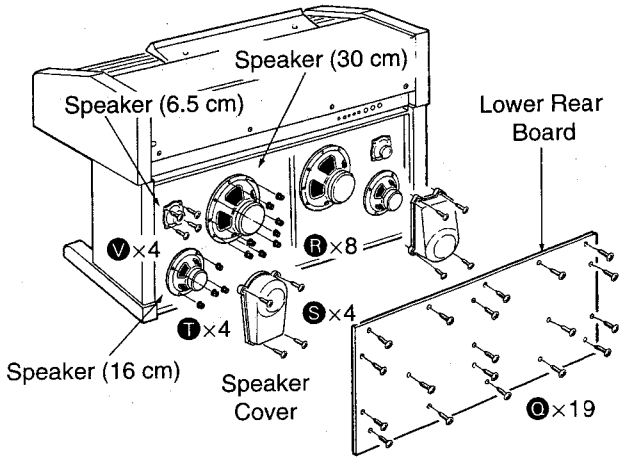
- Remove the 30 cm speaker mounting nuts (R 8 pcs.).

16 cm speakers

1. Remove the speaker cover mounting screws (S 4 pcs.).
2. Remove the 16 cm speaker mounting nuts (T 4 pcs.).

6.5 cm speakers

- Remove the 6.5 cm speaker mounting screws (V 4 pcs.).



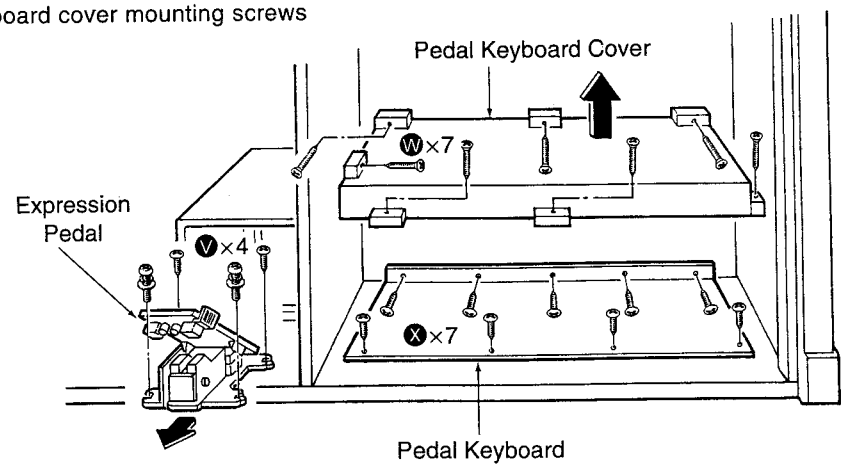
[Fig.17]

14 Removing the expression pedal

1. Remove the lower rear board (see step 13).
2. Remove the expression pedal mounting screws (V 4 pcs.).

15 Removing the pedal keyboard

1. Remove the lower rear board (see step 13).
2. Remove the pedal keyboard cover mounting screws (W 4 pcs.).
3. Remove the pedal keyboard cover.
4. Remove the pedal keyboard mounting screws (X 9 pcs.).
5. Tile the entire unit a little to toward to the rear very carefully for easier to take the pedal keyboard out from the bottom wood board.



[Fig.18]

MODIFICATIONS

■ PRINTED CIRCUIT BOARD

	RTL	Parts No.		Description	P/S
		SX-GA3	**SX-G100C**		
	RTL	SXPG218311	**SXPG218351**	MAIN	1
○	RTL	SXPG218811D	**SXPG2188202D**	ACP	1

■ WIRING PARTS

	Ref. No.	Parts No.		Description	P/S
		SX-GA3	**SX-G100C**		
	W1	QEXGSS15095A	**QEXGSS15105A**	CONNECTOR WITH WIRE	1
	W6	QEXGST16160A	**QEXGST16170A**	CONNECTOR WITH WIRE	1
	W7	QEXGSA10060A	**QEXGSA10065A**	CONNECTOR WITH WIRE	1
○	W14	QEXGSS13105A	**QEXGSS13115A**	CONNECTOR WITH WIRE	1
	W15	QEXGEH04055B	**QEXGEH04065B**	CONNECTOR WITH WIRE	1
	W17	QEXGSS10065A	**QEXGSS10080A**	CONNECTOR WITH WIRE	1
	W24	QEXGEL06045B	**QEXGEL06055C**	CONNECTOR WITH WIRE	1
○	W25	QEXGVH08105C	**QEXGVH08135B**	CONNECTOR WITH WIRE	1

MAIN MAIN CIRCUIT

	Ref. No.	Parts No.		Description	P/S	
		SX-GA3	**SX-G100C**		SX-GA3	**SX-G100C**
			INTEGRATED CIRCUIT			
	IC15	QSIGCGA3AX (QSIGH3C04E31)	**QSIGCF100AM**	4M BIT PROGRAMMED EP ROM	1	**1**
	IC16	———	**QSIGCF100BM**	4M BIT PROGRAMMED EP ROM	0	**1**
	IC17	———	**QSIGCF100CM**	4M BIT PROGRAMMED EP ROM	0	**1**
	IC18	QSIG03C160F2	**QSIGX3C08001**	8M BIT MASK ROM	1	**1**

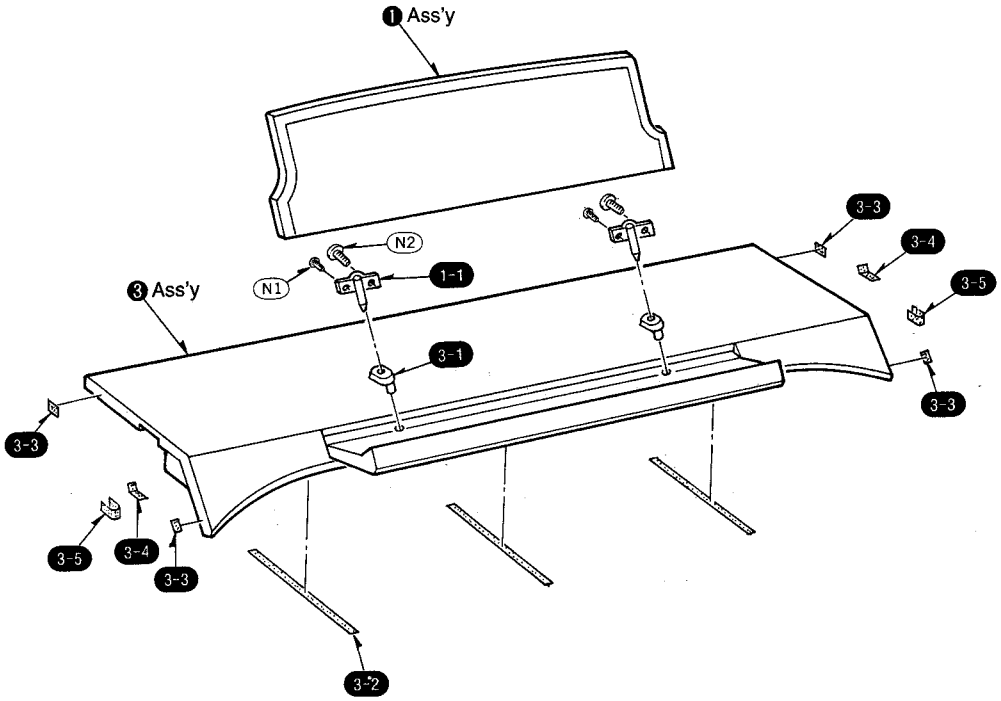
ACP AC POWER SUPPLY CIRCUIT

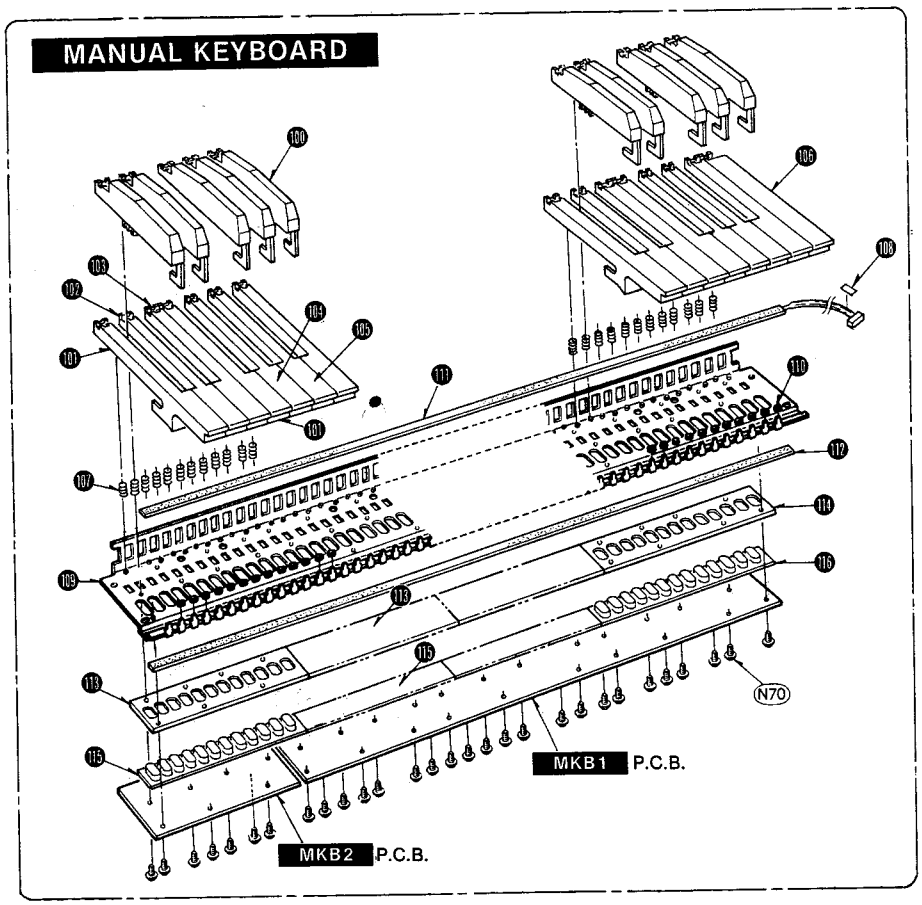
	Ref. No.	Parts No.		Description	P/S
		SX-GA3	**SX-G100C**		
			COIL		
	L1	SLTGLF4	**QLQGT2T100SA**	10μH ×2	1

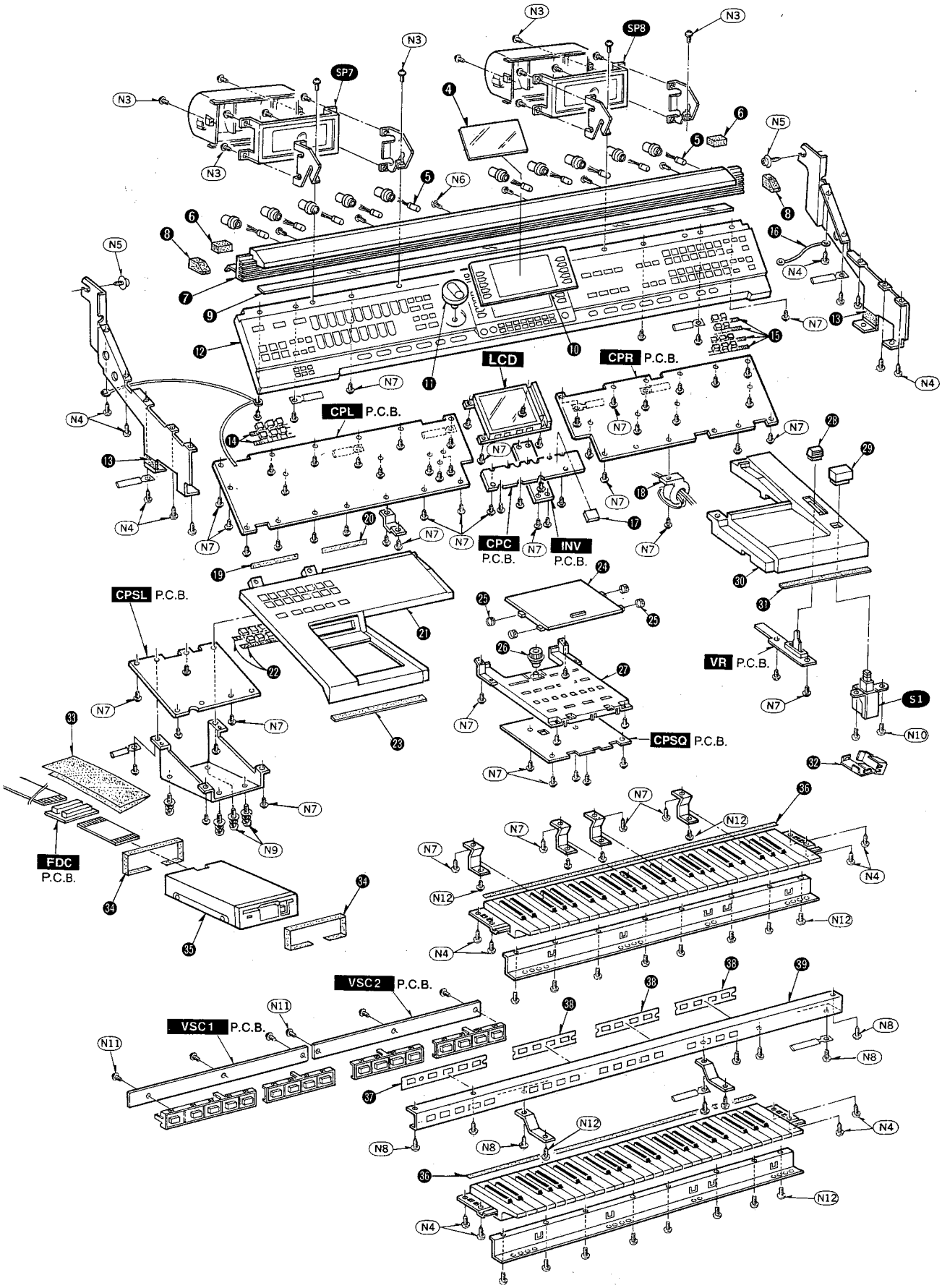
■ BUTTON

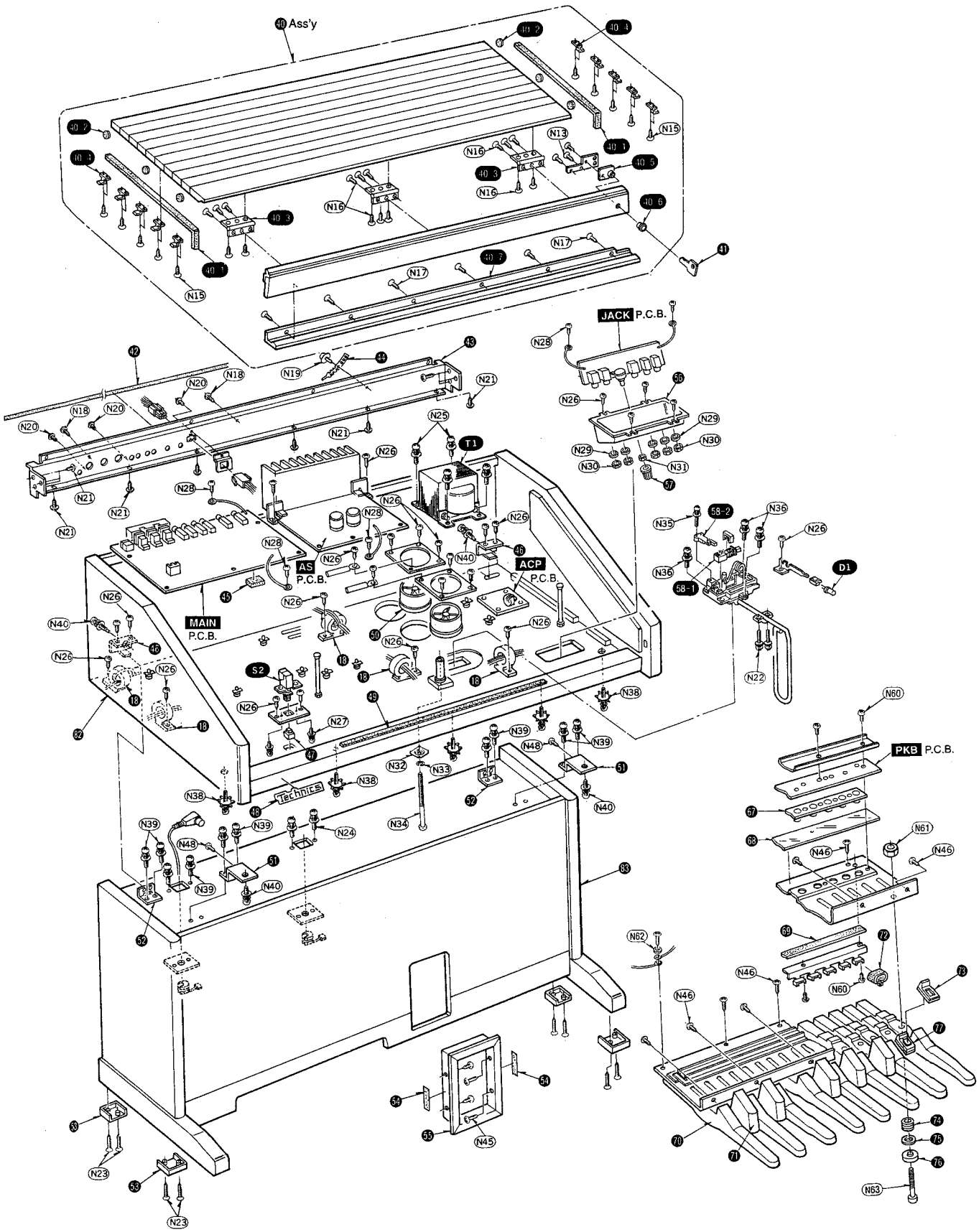
	Ref. No.	Parts No.		Description	P/S
		SX-GA3	**SX-G100C**		
	19	QGUG1278AA01	**QGUG1278AB01**	BUTTON	1

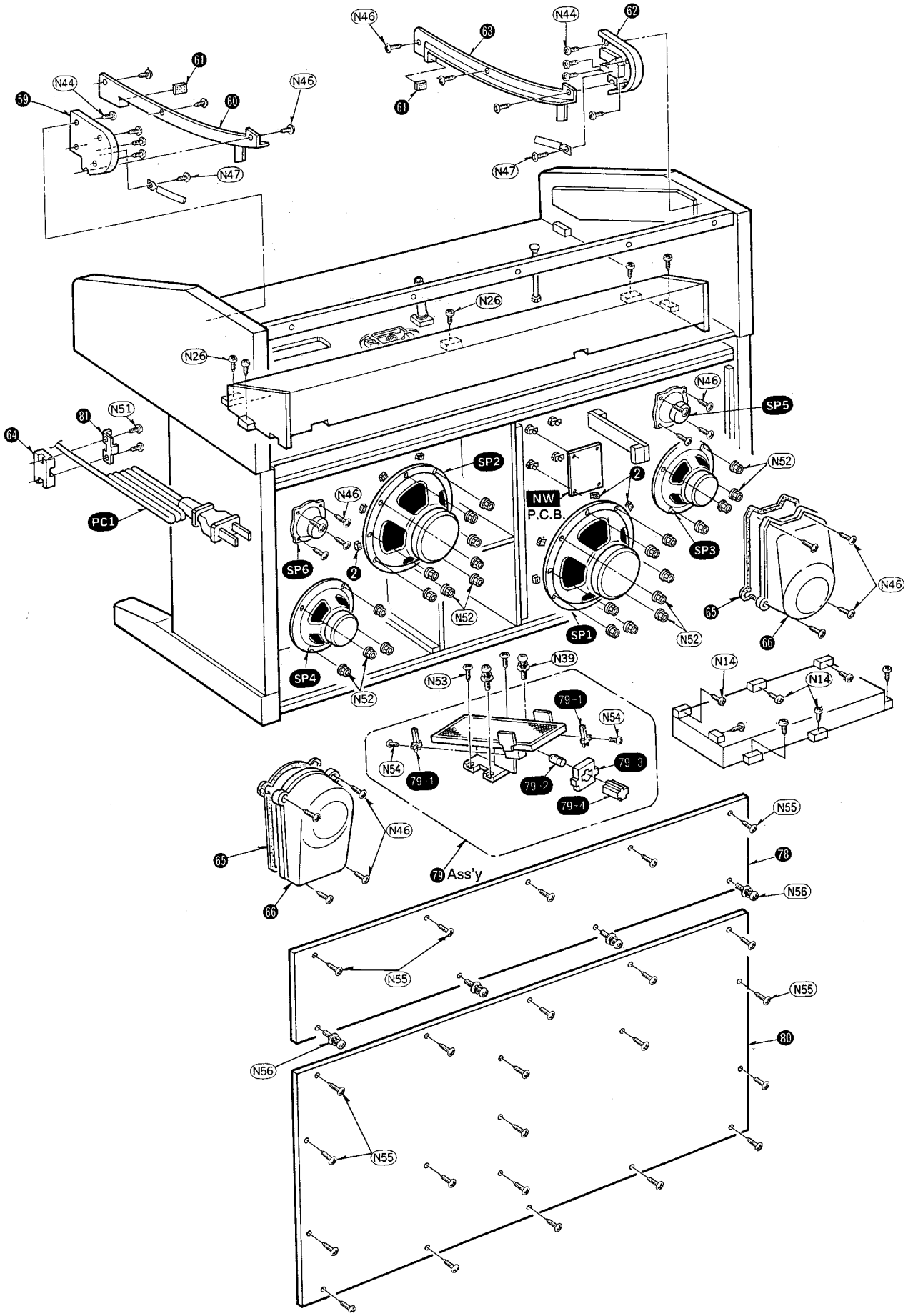
■ CABINET PARTS LOCATION






SP7
SP8
LCD
CPR P.C.B.
CPL P.C.B.
CPC P.C.B.
INV P.C.B.
CPSL P.C.B.
CPSQ P.C.B.
VR P.C.B.
S1
FDC P.C.B.
VSC2 P.C.B.
VSC1 P.C.B.


40 Ass'y
JACK P.C.B.
MAIN P.C.B.
AS P.C.B.
ACP P.C.B.
PKB P.C.B.
Technics


N46
N44
62
63
61
59
60
N47
N26
N51
81
64
PC1
SP2
NW
P.C.B.
SP5
N52
SP3
SP6
SP4
SP1
65
66
N39
N53
79-1
N54
79-3
79-2
79-4
N14
79 Ass'y
55
78
N56
80

REPLACEMENT PARTS LIST.....Cabinet and Chassis Parts

Notes:

1. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retension period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention.
   After the end of this period, the assembly will no longer be available.
2. ○ mark are new parts.
3. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
4. For part No. with area mark, check the area when placing an order.
5. The raw material indication for synthetic resin
   In order to facilitate classification of parts of synthetic resin manufacture and to promote the recycling of natural resources, a raw material symbol for such parts is indicated in the Ref. No./ Material column.
6. The marking (※) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production; the item will contiune to be available for a specific period of time.

■CABINET & CHASSIS PARTS

Ref. No.		Part No.	Description	P/S
		SWITCHES		
	S1 ⚠	ESB8273V	POWER SWITCH	1
	S2	SSHG1050A	POWER SWITCH	1
		DIODE		
	D1	LN29RP	LED, POWER INDICATOR	1
		SPEAKERS		
	SP1, 2	EAS30PL149A	30cm, 8Ω	2
	SP3, 4	SASG16PL03-F	16cm, 8Ω	2
	SP5, 6	EAS65PH31A3	6.5cm, 8Ω	2
	SP7, 8	EAS15S06A	6×13cm, 16Ω	2
		TRANSFORMER		
	T1 ⚠	QTPG1Q004A	POWER TRANSFORMER	1
		POWER CORD		
	PC1 ⚠	SJAG24	POWER CORD	1
		CABINET PARTS		
○	1	QYAG1036AB	MUSIC STAND ASS'Y	1
	1-1	SBLG230B	STAY	2
○	2	QMRG5184AA	AIR PACKING	16
○	3	QKQGA127AC	TOP COVER ASS'Y	1
	3-1	QMRG7021AA	SLEEVE	2
	3-2	QMFG1232AA	FELT	3
	3-3	QMFG1057AA	FELT	4
	3-4	QMFG1104AA	FELT	2
	3-5	QMFG1244AA	FELT	2
	4	QKWG013AA	LCD PANEL	1
	5	XAMR90S770	LAMP	10
	6	SHSG1830A	FELT	2
	7	QGKG0014AB	ORNAMENT	1
	8	QMRG7006AA	CAP	2
	9	QMRG7005AA	LAMP COVER	1
	10	QGPG0065AA	CENTER PANEL	1
	11 [ABS]	SBNG4061A	DIAL WHEEL	1
○	12 [ABS]	QGPG0063BD	CONTROL PANEL	1
	13	QMFG1031AA	FELT	2
	14	QMFG4127AA	CUSHION	2
	15	QMFG4125AA	CUSHION	4
	16	SWEG510A	WIRE	1
	17	QMRG2046AA	SPACER	1

Ref. No.		Part No.	Description	P/S
	18	QLZG017A	CORE	6
	19	SHSG6050A	CUSHION	1
	20	QMFG4103AA	CUSHION	1
○	21 [PS]	QGPG0064AE	LOWER CONTROL PANEL, LEFT	1
	22	QMFG4124AA	CUSHION	2
	23	QMFG4001AA	CUSHION	1
	24 [ABS]	QGPG0059AD	SUBPANEL FRAME	1
	25	SHGG9053A	RUBBER	4
	26	RDG5782ZB	GEAR	1
	27 [PS]	QGPG0058AG	SUBPANEL	1
	28	SBNG7031A	KNOB	1
	29	SBCG110B	BUTTON, POWER SWITCH	1
	30 [PS]	QGPG0003BC	LOWER CONTROL PANEL, RIGHT	1
	31	QMFG4002AA	CUSHION	1
	32 ⚠	SHRG8390A	COVER, POWER SW	1
	33	QMRG5164AA	CUSHION	1
	34	QMFG4103AA	CUSHION	2
	35	QAUG017AA	DISK DRIVE UNIT	1
○	36	QMFG1257AA	FELT	2
	37	QMRG7061AB	ORNAMENT	1
	38	QMRG7061BB	ORNAMENT	3
	39	QGKG0110AB	ORNAMENT, KEYBOARD	1
○	40	QKQGF030AC	KEYBOARD COVER ASS'Y	1
	40-1	QMFG1255AA	FELT	2
	40-2	SHSG119	CUSHION	6
	40-3	SBHG6007-1	HINGE	3
	40-4	SHRG9930A	CATCH, GUIDE RAIL	10
	40-5	SBEG31A	LOCK	1
	40-6	SBEG40A	STAPLE	1
	40-7	QGKG0127AA	ORNAMENT	1
	41	SBEG60A	KEY	1
○	42	QMFG4141AA	CUSHION	1
	43	QGKG0108AA	JACK PANEL	1
	44	SHRG1030A	CORD BAND	1
	45	QMGG031AA	SPACER	1
	46	SUWG3001A	BRACKET	2
	47	SBCG20I	BUTTON	1
	48	SGBG140B	BADGE	1
	49	SHSG3050A	FELT	1
	50	SYE1128-4	FAN	1
	51	SUWG3033A	BRACKET	2
	52	SUWG3020A	BRACKET	2
	53 [PP]	SHRG2250A	FOOT	4
○	54	QMFG1256AA	FELT	2
	55	SGXG1100A	ORNAMENT, EXPRESSION	1
	56 [PS]	SMKG1566A	JACK PANEL	1
	57	SBNG4010A	VOLUME KNOB	1
	58	SXVG3031B	KNEE LEVER ASS'Y	1

Ref. No.		Part No.	Description	P/S
	58-1	SSHG1020A	PUSH SWITCH	1
	58-2	SSLG1005A	LEAF SWITCH	1
	59	SKEG7650A	GUIDE RAIL	1
	60	SKEG7670A	GUIDE RAIL	1
	61	SHSG3571A	FELT	2
	62	SKEG7640A	GUIDE RAIL	1
	63	SKEG7660A	GUIDE RAIL	1
	64	SHRG1110A	CORD CLAMPER	1
	65	SHRGA7021A	AIR PACKING	2
	66	SHRG8290B	SPEAKER COVER	2
	67	QSPG1001AA	RUBBER SWITCH (5PCS.ON ONE)	3
○	68	QMRG2005AA	INSULATOR	1
	69	SHSG1600B	FELT	1
	70	STBG1164A	LONG KEY(BROWN)	8
	71	STBG2052A	BLACK KEY	5
	72	SHSG1460A	FELT	14
	73	SGXG1390A	ORNAMENT	1
	74	SUSG180A	SPRING	14
	75	SHGG8130A	RUBBER	14
	76	SHRG9240A	SPACER	14
	77	STBG2310A	FULL-BASE PEDAL	1
○	78	QKQGD113AC	REAR BOARD (UPPER)	1
○	79	SXVG6031A	EXPRESSION PEDAL	1
	79-1	SSHG14	FOOT SWITCH	2
	79-2	XAMR55P	LAMP	1
	79-3	SHGG908	LAMP HOLDING RUBBER	1
	79-4	RJS205ZA	SOCKET	1
○	80	QKUG1046AC	REAR BOARD (LOWER)	1
	81	SHRG1120A	CORD CLAMPER	1
○	82 ※	QYKG227AC	CABINET ASS'Y (UPPER)	1
○	83 ※	QYKG228AC	CABINET ASS'Y (LOWER)	1

MANUAL KEYBOARD PARTS

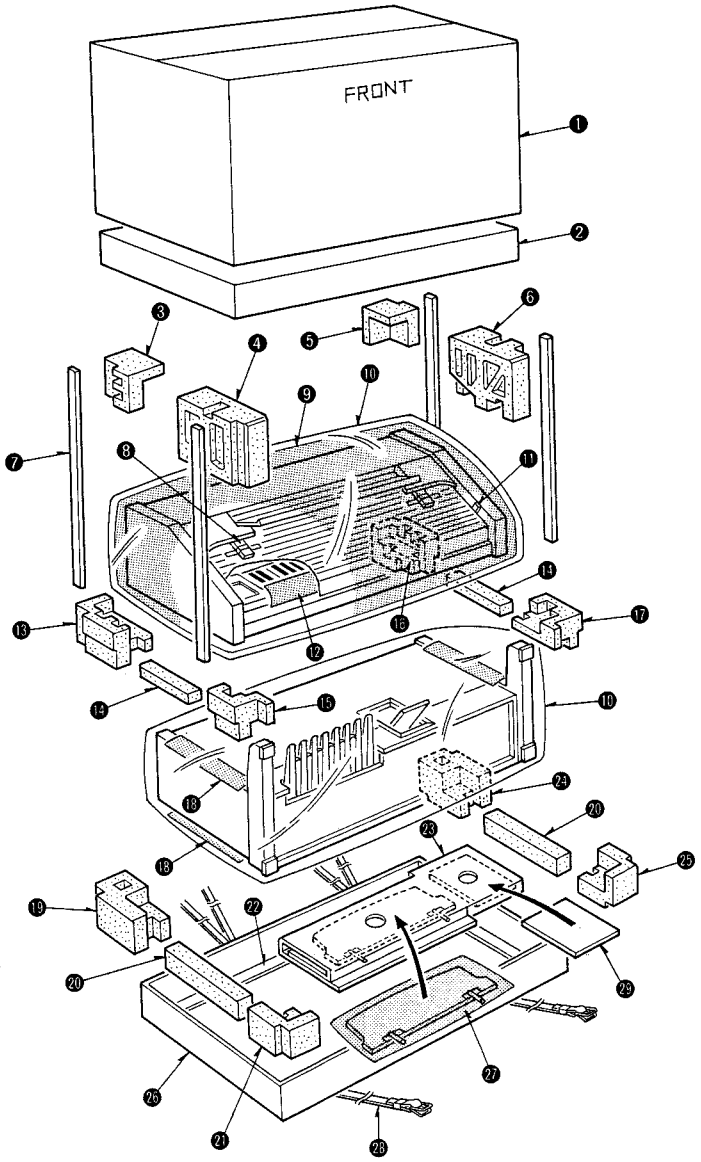
	100	STBG2071A	BLACK KEY	40
	101	STBG1101A	WHITE KEY (C&F KEY)	16
	102	STBG1111A	WHITE KEY (D KEY)	8
	103	STBG1121A	WHITE KEY (E&B KEY)	16
	104	STBG1131A	WHITE KEY (G KEY)	8
	105	STBG1141A	WHITE KEY (A KEY)	8
	106	STBG1151A	WHITE KEY (TOP OCTAVE C KEY)	2
	107	SUSG271A	SPRING	98
	108	QMFG4176AAK	CUSHION	2
	109	QMWG3011AA	CHASSIS	2
	110	SHGG9052A	KEY GUIDE RUBBER	98
	111	QMWG5001AA	AFTER TOUCH SENSOR	2
	112	QMFG1137BA	FELT	2
	113	QMWG8031DA	SPACER (12PCS.ON ONE)	6
	114	QMWG8030CA	SPACER (13PCS.ON ONE)	2
	115	QMWG6010BA	RUBBER SWITCH (12PCS.ON ONE)	6
	116	QMWG6009BA	RUBBER SWITCH (13PCS.ON ONE)	2

SCREWS & WASHERS

	N1	XTB35+10AFZ	SCREW	2
	N2	XTT4+10AFZ	SCREW	2
	N3	XTW3+10T	SCREW	16
	N4	XTB4+12A	SCREW	18
	N5	SNEG2400A	SCREW WITH WASHER	2
	N6	XTB26+6J	SCREW	6
	N7	XTW3+10Q	SCREW	81
	N8	XTT4+10AFZ	SCREW	8
	N9	XYN3+F6	SCREW WITH WASHER	4
	N10	XTBS26+10J	SCREW	2
	N11	XTW3+8T	SCREW	6
	N12	XTB3+5C	SCREW	22
	N13	XTS3+12A	SCREW	3
	N14	XTB35+30A	SCREW	7

Ref. No.	Part No.	Description	P/S
N15	XTS4+12A	SCREW	20
N16	XTS35+12A	SCREW	16
N17	XTS3+10AFVC	SCREW	6
N18	XTB35+12AFZ	SCREW	3
N19	XWG3F13FZ	WASHER	1
N20	XTW3+10JFZ	SCREW	3
N21	XTT35+12AFVC	SCREW	12
N22	XYN3+F16FZ	SCREW WITH WASHER	2
N23	XTB35+25A	SCREW	8
N24	QHDG004AA	SCREW	2
N25	XYN4+F20	SCREW WITH WASHER	4
N26	XTB35+12A	SCREW	31
N27	XSN3+6	SCREW	2
N28	SNEG2660A	SCREW	5
N29	SNEG770A	WASHER	5
N30	XNS12FZ	NUT	5
N31	SNE4021-1	NUT	1
N32	SNEG150B	WASHER	1
N33	XWA5BFZ	WASHER	1
N34	SNEG960B	SCREW	1
N35	XTN2+10FFX	SCREW	1
N36	XYN3+F12	SCREW WITH WASHER	3
N38	QHDG006AB	SCREW WITH WASHER	5
N39	XYN4+F20FZ	SCREW WITH WASHER	12
N40	QHDG030AA	SCREW WITH WASHER	4
N44	XTB35+20A	SCREW	8
N45	XTB3+14AFVC	SCREW	4
N46	XTT4+14A	SCREW	31
N47	XTV3+10G	SCREW	2
N48	XTB35+14A	SCREW	2
N51	XTB35+25A	SCREW	2
N52	SNE499-1	NUT	24
N53	XTT4+16AFZ	SCREW	2
N54	XTN26+6B	SCREW	2
N55	GTT4+30AFZ	SCREW	24
N56	XYN4+F12FZ	SCREW WITH WASHER	4
N60	XTB3+6B	SCREW	5
N61	XNG5BS	NUT	14
N62	XWA4B	WASHER	1
N63	SNEG360A	SCREW	14
N70	XTW3+10T	SCREW	60

■PACKING



■PACKING PARTS

Ref. No.		Part No.	Description	P/S
PACKING PARTS				
1		QPGG0400AB	PACKING CASE, PAPER	1
2		QPGG0401AA	TOP CASE, PAPER	1
3	PS	QPNG0670AA	PAD	1
4	PS	QPNG0668AA	PAD	1
5	PS	QPNG0671AA	PAD	1
6	PS	QPNG0669AA	PAD	1
7		QPQG057AB	PROP	4
8		QPNG0631AA	PAD	2
9	PE	QPHG076AA	PROTECTION SHEET	1
10	PE	SPHG770A	POLYETHYLENE BAG	2
11		SHSG2090A	FELT	2
12	PE	QPHG010CA	PROTECTION SHEET	1
13	PS	QPNG0674AA	PAD	1
14	PS	QPNG0680AA	PAD	2
15	PS	QPNG0672AA	PAD	1
16	PS	QPNG0675AA	PAD	1
17	PS	QPNG0673AA	PAD	1
18	PE	QPHG077AA	PROTECTION SHEET	4
19	PS	QPNG0678AA	PAD	1

Ref. No.		Part No.	Description	P/S
20	PS	QPNG0681AA	PAD	2
21	PS	QPNG0676AA	PAD	1
22		QPQG058AB	FRAME	1
23		QPGG0273AA	MUSIC STAND CASE, PAPER	1
24	PS	QPNG0679AA	PAD	1
25	PS	QPNG0677AA	PAD	1
26		QPGG0402AA	BOTTOM CASE, PAPER	1
27	PS	SPHG2020A	PROTECTION SHEET	1
28		SPSG40A	BAND	2
OPERATING INSTRUCTION MANUAL				
○ 29		QQFGG100CBA	OPERATING INSTRUCTION MANUAL, EZ	1
○ 29		QQFGG100CCA	OPERATING INSTRUCTION MANUAL, EH	1
○ 29-1		QQTG0250A	FRANCAIS	1
29-2		QQTG0251A	DEUTSCH	1
○ 29-3		QQTG0252A	NERDERLANDS	1

Printed in Japan
98101000 Ⓡ H.H./K.K.

ORDER NO.EMID0003002S2
A4

9730

Service Manual

Electronic Organ

Supplement

SX-G100C

Area

(EZ).....Germany.

Subject : Change of Cabinet Parts List depend on a formalin countermeasure.

Please file and use this supplement manual together with the service manual for Model No.SX-G100C(EZ), Order No.EMID981698.

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

1 Replacement Parts List (Change Part)

[CABINET & CHASSIS PARTS (Refer to pages 14, 15.)]

Note:

The marking (*) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production; the item will continue to be available for a specific period of time.

Ref. No.	Change of part No.		Part Name & Description	Pcs.	Remarks
	ORIGINAL	**NEW**			
CABINET PARTS					
1	QYAG1036AB	**QYAG1036ABZ**	MUSIC STAND ASS'Y	1	
3	QKQGA127AC	**QKQGA127ABZ**	TOP COVER ASS'Y	1	
40	QKQGF030AC	**QKQGF030ABZ**	KEYBOARD COVER ASS'Y	1	
78	QKQGD113AC	**QKQGD113ABZ**	REAR BOARD (UPPER)	1	
80	QKUG1046AC	**QKUG1046ABZ**	REAR BOARD (LOWER)	1	
82*	QYKG227AC	**QYKG227ABZ**	CABINET ASS'Y (UPPER)	1	
83*	QYKG228AC	**QYKG228ABZ**	CABINET ASS'Y (LOWER)	1	

Technics®

© 2000 Matsushita Electric Industrial Co., Ltd. All rights reserved. Unauthorized copying and distribution is a violation of law.

Printed in Japan H000300550 TN/TF (2305)0002-006

EMID0007028S0
A4

Electronic Organ

SX-GA1 / SX-GA2 / SX-GA3

Area
(M) U.S.A.
(MC) Canada
(XM) Mexico
(EN) Norway, Sweden, Denmark, Finland,
(EH) Holland, Belgium
(EF) France, Italy
(EZ) Germany
(EW) Switzerland

(EA) Austria
(EP) Spain, Portugal, Greece
(EK) the United Kingdom
(XL) New Zealand
(XR) Australia
(XS) Malaysia, Singapore, South Africa
(XD) Saudi Arabia, Kuwait
(X) the Middle East, Indonesia, Hong Kong, Thailand
(XT) Taiwan
(XP) Philippines

Change of Disk Drive Unit / (The disk drive unit has been replaced with a new type.)

This document is supplementary to the following Service Manuals.

Model No.	Area Code	Order No.	Bran
SX-GA1	(M, MC, XM, EN, EH, EF, EZ, EW, EA, EP, EK, XL, XR, XS, XD, X, XT)	EMID941514	Technics
SX-GA2	(EP, XL, XR, XS, XD, X, XT, XP)	EMID971619	Technics
SX-GA3	(M, MC, XM, EN, EH, EF, EZ, EW, EA, EP, EK, XL, XR, XS, XD, X, XT)	EMID941513	Technics

© 2000 Matsushita Electric Industrial Co., Ltd. All rights reserved.
Unauthorized copying and distribution is a violation of law.

Technics®

1. Replacement Part List

Ref. No.	Change of Parts No.		Part Name & Description	Remarks
	Original	Supplement		
CABINET PARTS				
	QAUG017AA	QAUG027AA	DISK DRIVE UNIT	CHANGE
	QEUGMSW06D	QEXGZA34015B	CONNECTOR WITH WIRE	CHANGE
	QMFG4103AA	QMFG1220AA	CUSHION	CHANGE
PRINTED CIRCUIT BOARED				
	SXPG229211	SXPG235611	FDC	CHANGE

2. CABINET PART LOCATION

Printed in Japan / S000900000 HM/TF / 000718A T.I.No.2574

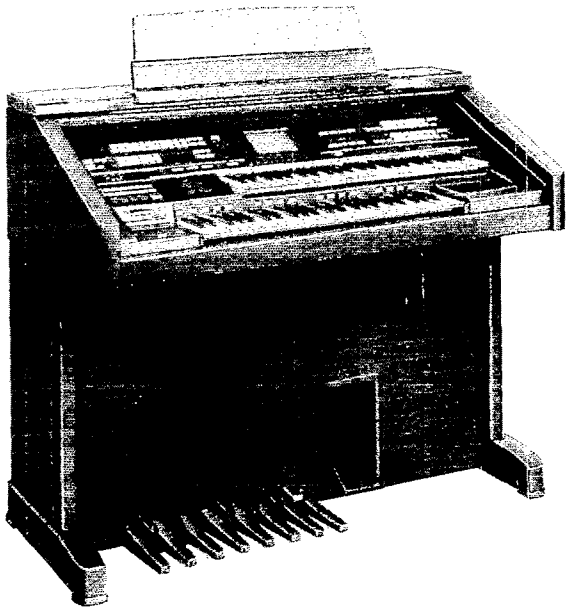
ORDER NO. EMID941513
A4

Service Manual

Electronic Organ

SX-GA3

(M), (MC), (XM), (EN), (EH), (EF), (EZ), (EW), (EA), (EP), (EK), (XL), (XR), (XS), (XD), (X), (XT)



AREAS

(M): U.S.A.
(MC): Canada
(XM): Mexico
(EN): Norway, Sweden, Denmark, Finland
(EH): Holland, Belgium
(EF): France, Italy
(EZ): Germany
(EW): Switzerland
(EA): Austria
(EP): Spain,Portugal,Greece
(EK): the United Kingdom
(XL): New Zealand
(XR): Australia
(XS): Malaysia, Singapore, South Africa
(XD): Saudi Arabia, Kuwait
(X): the Middle East, Indonesia, Hong Kong, the Philippines, Thailand
(XT): Taiwan

■ Specifications

KEYBOARD			UPPER KEYBOARD: 49 KEYS, LOWER KEYBOARD: 49 KEYS PEDAL KEYBOARD: 13 KEYS, FULL BASS PEDAL
SOUND GENERATOR			PCM
MAXIMUM NUMBER OF NOTES PRODUCED SIMULTANEOUSLY			ORGAN PART 64 NOTES / ALL OTHER PARTS 64 NOTES
SOUND	ORCHESTRAL CONDUCTOR (UPPER/LOWER)		ORGAN, SOUND 1, SOUND 2, SOUND 3
	SOUND GROUP (UPPER/LOWER) 200 SOUNDS		GROUP: PIANO, ELECTRIC PIANO/HARPSICHORD, GUITAR, STRINGS/VOCAL, BRASS, FLUTE, MALLET, SPECIAL PERC, REED, SAX/CLARINET, SYNTH BRASS/LEAD, SYNTH PAD
	ORGAN	TYPE (10 TYPES)	GROUP: ELECTRONIC TABS, DRAWBARS, PIPE ORGAN
		TAB	UPPER: 16', 5-1/3', 8', 4', 2-2/3', 2', 1-3/5', 1-1/3, 1', 4'PERC, 2-2/3'PERC LOWER: 8', 4', 2-2/3', 2', 1-1/3', 1'
	BASS PEDALS (63 SOUNDS)		GROUP: ORGAN, STANDARD, CONTEMPORARY, CLASSICAL ORGAN, ORCHESTRAL, MEMORY
EFFECT	TREMOLO		UPPER ORGAN, LOWER ORGAN (SLOW/FAST)
	EFFECT		UPPER ORGAN, LOWER ORGAN
	SUSTAIN		UPPER ORGAN, LOWER ORGAN, UPPER SOUND GROUP, LOWER SOUND GROUP, BASS PEDALS
	DIGITAL EFFECT		UPPER SOUND GROUP, LOWER SOUND GROUP, BASS PEDALS
	DSP EFFECT		UPPER SOUND GROUP, LOWER SOUND GROUP
	BRILLIANCE		UPPER SOUND GROUP, LOWER SOUND GROUP, BASS PEDALS
	DIGITAL REVERB		○
TRANSPOSE			G-C-F#
TECHNI-CHORD			○
BACKGROUND SOUND			BIRD, WAVE, RAIN, CHURCH BELL, APPLAUSE
RHYTHM (140 RHYTHMS)			GROUP: 8 BEAT, 16 BEAT, BIG BAND/SWING, JAZZ COMBO, COUNTRY/RHYTHM & BLUES, MARCH/POLKA, LATIN 1, 2, ROCK/DISCO, MODERN ROCK, ROCK (OTHERS), SHOW TIME, TRAD, WALTZ
CONTROL			MAIN VOLUME, BALANCE, U/L ORGAN TYPE, START/STOP, INTRO & ENDING, FILL IN 1, 2, VARIATION, COUNT INTRO, SYNCHRO & BREAK, TEMPO/PROGRAM, KEYBOARD PERCUSSION, CONTRAST, LIGHT
AUTO PLAY CHORD			ONE FINGER, FINGERED, PIANIST, MEMORY, DYNAMIC ACCOMP
EASY PLAY STYLE			ONE TOUCH ORGAN, ONE TOUCH REGISTRATION, ONE TOUCH PLAY/MUSIC STYLE SELECT, MUSIC STYLE ARRANGER
PANEL MEMORY			1-16, SET

Technics

COMPOSER	5 PARTS: ACCOMP 1, 2, 3, BASS, DRUMS STORAGE CAPACITY: APPROX. 8600 NOTES INPUT MODES: REAL TIME RECORD, STEP RECORD FUNCTIONS: MODE SELECT, PATTERN COPY , LOAD SINGLE COMPOSER PATTERN MEMORY: 2 BANK × 6
SEQUENCER	16 TRACKS STORAGE CAPACITY: APPROX. 28000 NOTES INPUT MODES: EASY RECORD, REAL TIME RECORD, STEP RECORD FUNCTIONS: PUNCH RECORD, TRACK ASSIGN, EXPRESSION SETTING, AFTER TOUCH SETTING, EDIT (SONG CLEAR, TRACK CLEAR, TRACK MERGE, QUANTIZE, MEASURE ERASE, MEASURE COPY, MEASURE DELETE, MEASURE INSERT, VELOCITY CHANGE), PLAY, MEDLEY
DISK DRIVE	3.5 INCH (FOR 2HD, 2DD) DISK SAVE, DISK LOAD, MIDI FILE LOAD, MIDI FILE SAVE, DISK FORMAT, LOAD SINGLE COMPOSER PATTERN, LOAD SINGLE SOUND MEMORY
SOUND	PART SETTING (SUSTAIN, BRILLIANCE, REVERB, DSP EFFECT, PAN, KEY SHIFT, TUNING, VOLUME, BEND RANGE, ASSIGN MODE), REVERB SETTING, DSP EFFECT, TREMOLO SETTING, MASTER TUNING, TECHNI-CHORD TYPE, GLIDE SETTING
MEMORY & CONTROL	INITIAL SETTING, SWITCH ASSIGN, POWER ON MODE, PANEL MEMORY MODE, MUSIC STYLE ARRENGER MODE, OUTPUT SETTING
SOUND EDIT	EASY EDIT, GENERAL EDIT (OCTAVE SHIFT, VIBRATO, AUTOBEND & TRILL, MODULATION, DISTORTION, GLIDE, SUSTAIN MODE, AFTER TOUCH), TONE EDIT (TONE, LEVEL, ENVELOPE, ENVELOPE KEY FOLLOW, FILTER), EFFECT EDIT MEMORY: 2 BANK × 18 FOR EACH KEYBOARDS
MIDI	BASIC CHANNEL, CONTROL MESSAGE, OCTAVE SHIFT & LOCAL ON/OFF, REAL TIME MESSAGE, COMMON SETTING & PANEL MEMORY OUTPUT, MIDI PRESETS, INPUT SETTING, OUTPUT SETTING, SYSEX BULK DUMP, GENERAL MIDI
DISPLAY	LCD (320× 240 DOTS) CONTRAST, EXIT, DISPLAY HOLD
HELP	○
DEMO	○
TERMINALS	SEPARATED LINE OUT (ORGAN, BASS, DRUMS), LINE OUT (R/R+L, L), PHONES 1, 2, MIC, AUX IN (R/R+L, L), MIDI (IN, OUT, THRU)
OUTPUT	320 W
SPEAKER	30cm × 2, 16cm × 2, 6.5 cm × 2 MONITOR: (13 cm × 6cm) × 2
POWER REQUIREMENT	830 W 600 VA (CANADA), 470W (U.S.A. AND MEXICO)
	AC 120/220/240 V 50/60 Hz AC 120 V 60 Hz (NORTH AMERICA AND MEXICO) AC 230 V 50/60 Hz (NEW ZEALAND AND EUROPE EXCEPT FOR UNITED KINGDOM) AC 230-240 V (UNITED KINGDOM)
DIMENSIONS (W × H × D)	124.6 cm × 121.7 cm × 60.1 cm(49-1/16"× 47-29/32"× 23-21/32")
NET WEIGHT	104 Kg (229.3 lbs)

*Specification are subject to change without notice for further improvement.

CONTENTS

■ **PART I (INTRODUCTION)**

HOW TO ASSEMBLE THE ORGAN I-2
SAFETY PRECAUTION I-3
INITIAL SETTING I-3
ARRANGEMENT OF CONTROL PANEL I-4
BASIC FUNCTIONS I-4
TERMINALS I-7
KEYBOARD RANGES I-8
PARTS LOCATION I-9
DISASSEMBLY INSTRUCTIONS I-10
ERROR DISPLAY I-14
SYMPTOMS WHICH APPEAR TO BE SIGNS OF TROUBLES I-15
ABOUT THE SELF-DIAGNOSTIC FUNCTION I-17
MIDI IMPLEMENTATION CHART I-19
PRECAUTIONS BEFORE SERVICING I-21

■ **PART II (SCHEMATIC DIAGRAM)**

WIRING CONNECTION DIAGRAM II-1
BLOCK DIAGRAM II-3
MAIN MAIN CIRCUIT BOARD II-6
MAIN MAIN CIRCUIT DIAGRAM II-9
MAIN CIRCUIT SOUND GENERATORS II-13
VSC1 VSC2 VOICE SETTING COMPUTER CIRCUIT II-17
CPR VR CONTROL PANEL RIGHT, MAIN VOLUME CIRCUIT BOARD II-19
CPR VR CONTROL PANEL RIGHT, MAIN VOLUME CIRCUIT DIAGRAM II-21
CPL CONTROL PANEL LEFT CIRCUIT BOARD II-23
CPL CONTROL PANEL LEFT CIRCUIT DIAGRAM II-25
CPSQ SEQUENCER CONTROL CIRCUIT BOARD II-27
CPSQ SEQUENCER CONTROL CIRCUIT DIAGRAM II-29
CPSL CPC LOWER CONTROL PANEL LEFT, CONTROL PANEL CENTER CIRCUIT BOARD II-31
CPSL CPC LOWER CONTROL PANEL LEFT, CONTROL PANEL CENTER CIRCUIT DIAGRAM II-33
INV INVERTER CIRCUIT II-35
AS ACP JACK NW AMP & POWER SUPPLY, AC POWER SUPPLY, JACK, NETWORK CIRCUIT BOARD II-36
AS ACP JACK NW AMP & POWER SUPPLY, AC POWER SUPPLY, JACK, NETWORK CIRCUIT DIAGRAM II-39
MKB MANUAL KEYBOARD CIRCUIT II-42
PKB PEDAL KEYBOARD CIRCUIT II-45

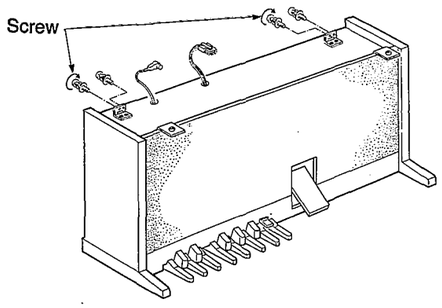
■ **PART III (REPLACEMENT PARTS LIST)**

REPLACEMENT PARTS LIST (P.C.B. and Wiring Parts) III-1
CABINET PARTS LOCATION III-9
REPLACEMENT PARTS LIST (Cabinet and Chassis Parts) III-12
PACKING III-16

HOW TO ASSEMBLE THE ORGAN

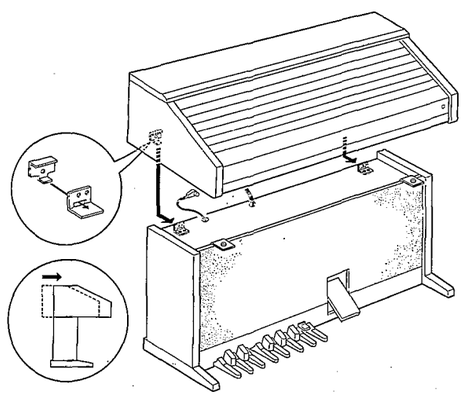
· To prevent the upper organ part from falling off the lower organ part, secure it firmly with the screws.

1 On the lower organ part, remove the four screws from the metal joints. Lay the cords to the back of the lower organ part.



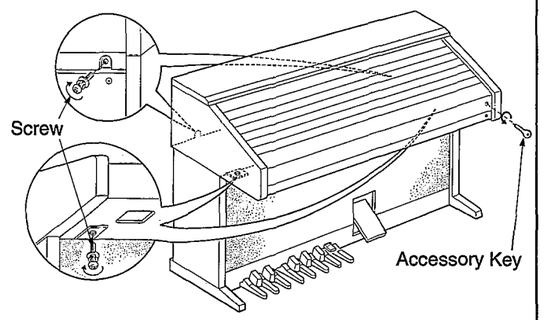
[Fig. 1]

2 Place the upper organ part on the lower organ part, making sure to fit the metal pieces together.



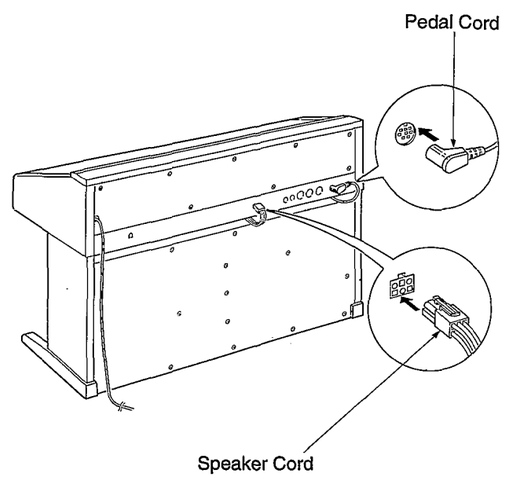
[Fig. 2]

3 Using the four screws removed in step 1, secure the upper organ part to the lower organ part as shown in figure. Unlock the cover with the accesory key.



[Fig. 3]

4 Connect the speaker cord and pedal cord as shown.



[Fig. 4]

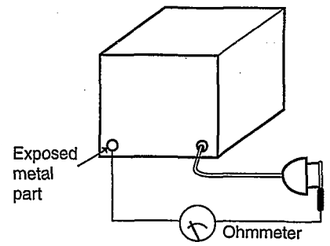
SAFETY PRECAUTION (This "safety precaution" is for the U.S.A. only)

● **Safety Precaution**

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only the manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc. .
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

● **Insulation Resistance Test**

1. Unplug the power cord and short the prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with an ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screw heads, connectors, control shafts, handle brackets, etc. . Measurements should range from 4 MΩ to infinity for all exposed parts.



Resistance = 4MΩ to ∞

INITIAL SETTING

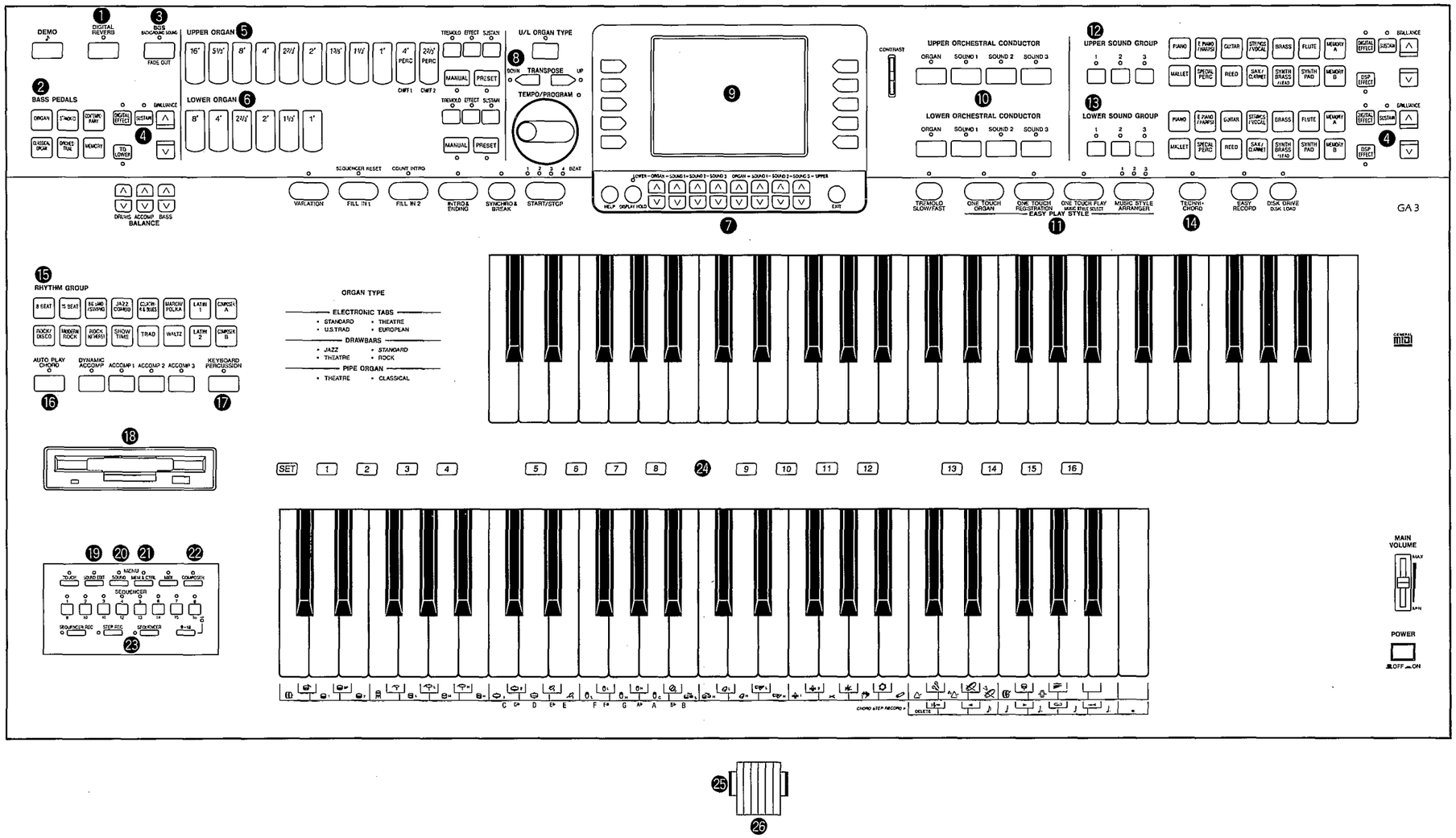
The initial setting function is used to return to the original factory settings, and to reset the customer settings and misoperations.

1. Press the **POWER** button to turn off the instrument.
2. While pressing the three lower left buttons in the **RHYTHM GROUP** section at the same time, turn the **POWER** button on again.

NOTE:

All stored data in the **SEQUENCER** and **COMPOSER** and other settings are initialized with this operation.

ARRANGEMENT OF CONTROL PANEL



BASIC FUNCTIONS

❶ DIGITAL REVERB
Add reverberation to the sound.

❷ BASS PEDALS
These are the sounds for the pedal keyboard. **MEMORY** button is for storing unique sounds you create yourself with the **SOUND EDIT** feature. The **BASS** sound volume is adjusted with the respective buttons in the separate **BALANCE** section.

❸ BGS
Five unique background sounds add special like and interest to your performance.

❹ Effects
The **DIGITAL EFFECT**, **SUSTAIN** *and* **BRILLIANCE** effects are turned on and off for the selected upper and lower keyboard sounds.

❺ UPPER ORGAN
Select the organ sounds to be played on the upper keyboard. The volume is adjusted with the respective buttons below the display.

❻ LOWER ORGAN
Select the organ sounds to be played on the lower keyboard.

❼ Balance
The volumes for the upper and lower keyboard parts are controlled with the corresponding buttons below the display. The **BASS** volume is adjusted with the **BASS** buttons in the separate **BALANCE** section.

❽ TRANSPOSE
C is the standard setting, but you can raise or lower the key of the entire organ with the two buttons. The transposed key is shown on the normal mode display.

❾ Display
In the normal mode, the display indicates the selected sounds, volumes, rhythm, tempo, and all other information about the panel settings. The display is also used for setting the various functions. The amazing number and range of settable functions makes the GA series organ truly an instrument which you can fashion to fit exactly your particular playing style and tastes. And finally, the display is your key to programming when using the **SOUND EDIT**, **COMPOSER** and **SEQUENCER** features of your organ. The **CONTRAST** is adjusted with the sliding control.

⑩ **ORCHESTRAL CONDUCTOR**
These buttons allow you to select groups of sounds, or parts, and their effects instantly. The upper and lower keyboard parts are selected respectively with the **UPPER** and **LOWER ORCHESTRAL CONDUCTOR**.

⑪ **EASY PLAY STYLE**
A simple operation provides automatic selection of the sounds, effect and various other panel settings which are suitable for the registration you chose.

⑫ **UPPER SOUND GROUP**
With this block of buttons, you select the sound for each of three sound parts. First you select a part (**1**, **2** or **3**), and then you select one of the many preset sounds for that part. Store a different sound for each part. When a part is selected in the **UPPER ORCHESTRAL CONDUCTOR**, the sound you set for that part is selected for the upper keyboard. **MEMORY** buttons are for storing unique sounds you create yourself with the **SOUND EDIT** feature. The volume of each part is adjusted with the respective buttons below the display.

⑬ **LOWER SOUND GROUP**
Sounds are selected for the lower keyboard parts in the same way as for the **UPPER SOUND SELECT** parts. The lower keyboard sounds are used mostly for accompaniment.

⑭ **TECHNI-CHORD**
Chord notes played on the lower keyboard are added to melody notes played on the upper keyboard. Choose from four harmonic styles.

⑮ **RHYTHM GROUP**
Select one of the various preset rhythms and start it instantly with the **START/STOP** button. Other features which enhance the **RHYTHM** unit are **SYNCHRO & BREAK, INTRO & ENDING, FILL IN** and a foot switch. The volume is adjusted with the **DRUMS** buttons in the **BALANCE** section.

⑯ **AUTO PLAY CHORD**
Add an automatic accompaniment to your selected rhythm. A full chord and a bass note are automatically produced when you play a key on the lower keyboard. Play major, minor, seventh or minor seven chords and the bass note just by pressing one key. The volume for each part of the **AUTO PLAY CHORD (ACCOMP, BASS, DRUMS)** is adjusted with the respective buttons in the separate **BALANCE** section.

⑰ **KEYBOARD PERCUSSION**
One press of the **KEYBOARD PERCUSSION** button transforms your lower keyboard into a whole band of percussive instruments and special sounds. The keys are picture-coded for quick and easy selection.

⑱ **Disk Drive**
The Disk Drive allows you to store up to 20 performances on a 3.5-in. 2HD, 2DD memory disk.

⑲ **SOUND EDIT functions**
With this feature you select a preset sound, modify it until it sounds just the way you like it, and then store it in one of the memory locations. Edit and store many sounds for each of the **UPPER** and **LOWER SOUND SELECT** sections and **BASS** sounds.

⑳ **SOUND functions**
Turning on this button readies the display for use as a controller to preset sounds, effects, volume, and mode setting for each part.

㉑ **MEMORY & CONTROL functions**
The settable functions in this mode include memory initialization, **TECHNI-CHORD** harmony style, tuning, scale-effect, **PANEL MEMORY** range, glide pitch-change, vibrato depth, switch assign, and more.

㉒ **COMPOSER**
Create original rhythm patterns, either in real-time or with the step method, or modify preset rhythms. Store up to 12 new rhythms in the reserved memory locations for instant recall as you play.

㉓ **SEQUENCER**
With this feature you can separately play and store the parts for an entire tune. Then have the hole ensemble performance played back automatically. This is a true 8-track sequencer, with full real-time recording, step recording and editing features.

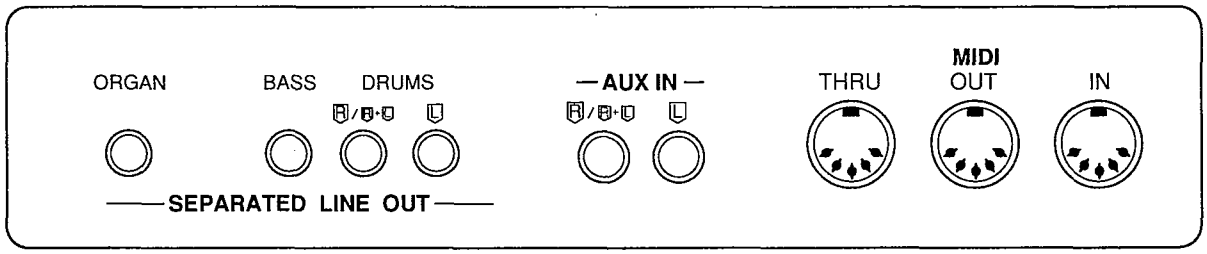
㉔ **PANEL MEMORY**
Set up the sounds and effects for the upper, lower and pedal keyboards, and then store them in these 16 buttons for instant recall as you play. You can expand the range of the storable settings to include rhythm selection, tempo setting and more.

㉕ **Glide control**
Lower the pitch of the organ by one half-tone or whole tone by pressing the left foot switch. This is used, for example, to get the Hawaiian guitar effect.

㉖ **Expression pedal**
Increase and decrease the loudness of all the organ sound as you play to add expression to the music.

TERMINALS

(on the rear panel)



SEPARATED LINE OUT
The signals of the **BASS, DRUMS** and **ORGAN** parts can be output independently from these terminals. The **DRUMS** output signal can be stereo. For monaural output, connect the speaker to the **R/R+L** terminal. (In this case, do not use the **L** terminal.)

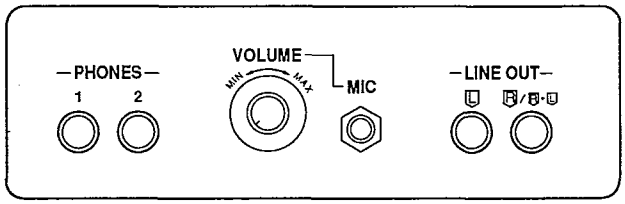
AUX IN (input level 500 mV, 33 kΩ)
Other instruments such as a keyboard can be connected to the organ so that the signal is output from the organ. This terminal runs through the expression pedal circuit and you can control the volume of the connected instrument with the expression pedal. To receive monaural sound, connect instruments to the **R/R+L** terminal. (In this case, do not use the **L** terminal.)

MIDI (Musical Instrument Digital Interface)
MIDI is the standard specification that enables connection to equipment such as synthesizers and personal computers.

IN : The terminal that receives data from external equipment.
OUT : The terminal that transmits data from this instrument to external equipment.
THRU: The terminal that transfers data from the **IN** terminal directly to other equipment.

- Use a 5-pin DIN cord (less than 15 m long) for these connections.

(Beneath the right side of the lower keyboard)



PHONES 1, 2
For silent practice, headphones may be used. When plugged in, this instrument's speaker system is automatically switched off, and the sound is heard only through the headphones.

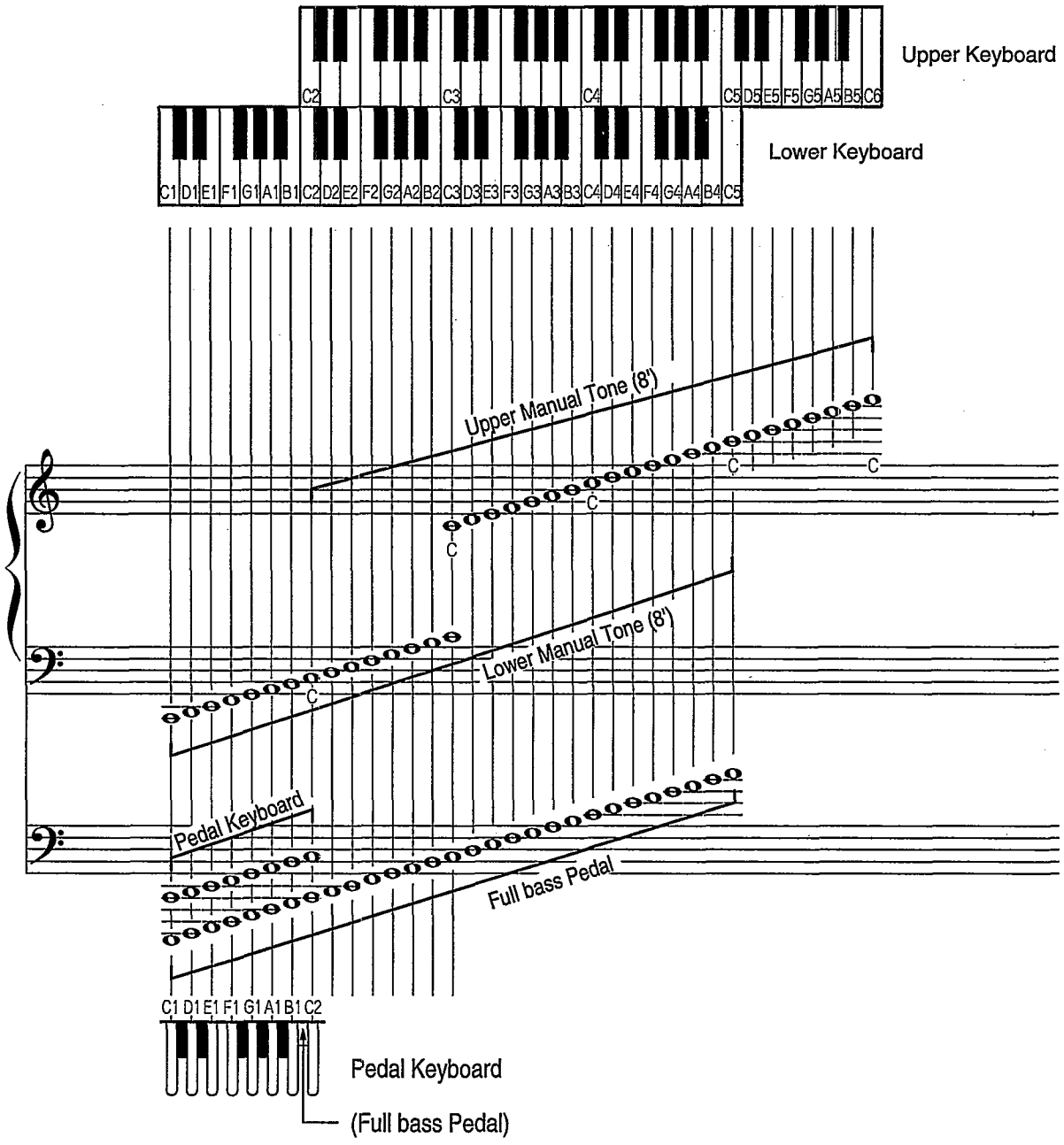
MIC (input level 7.5 mV, 10 kΩ)
A microphone can be connected to this terminal for output from the organ's speakers. You can, for example, sing while you play the organ, and both sounds are heard from the organ's speakers. Control the output level with the **VOLUME** control.

LINE OUT (output level 1.0 Vrms, 600 Ω)
By connecting an external high-power amplifier, the sound can be reproduced at a high volume. To output monaural sound, connect the external equipment to the **R/R+L** terminal. (Do not connect the **L** terminal.)

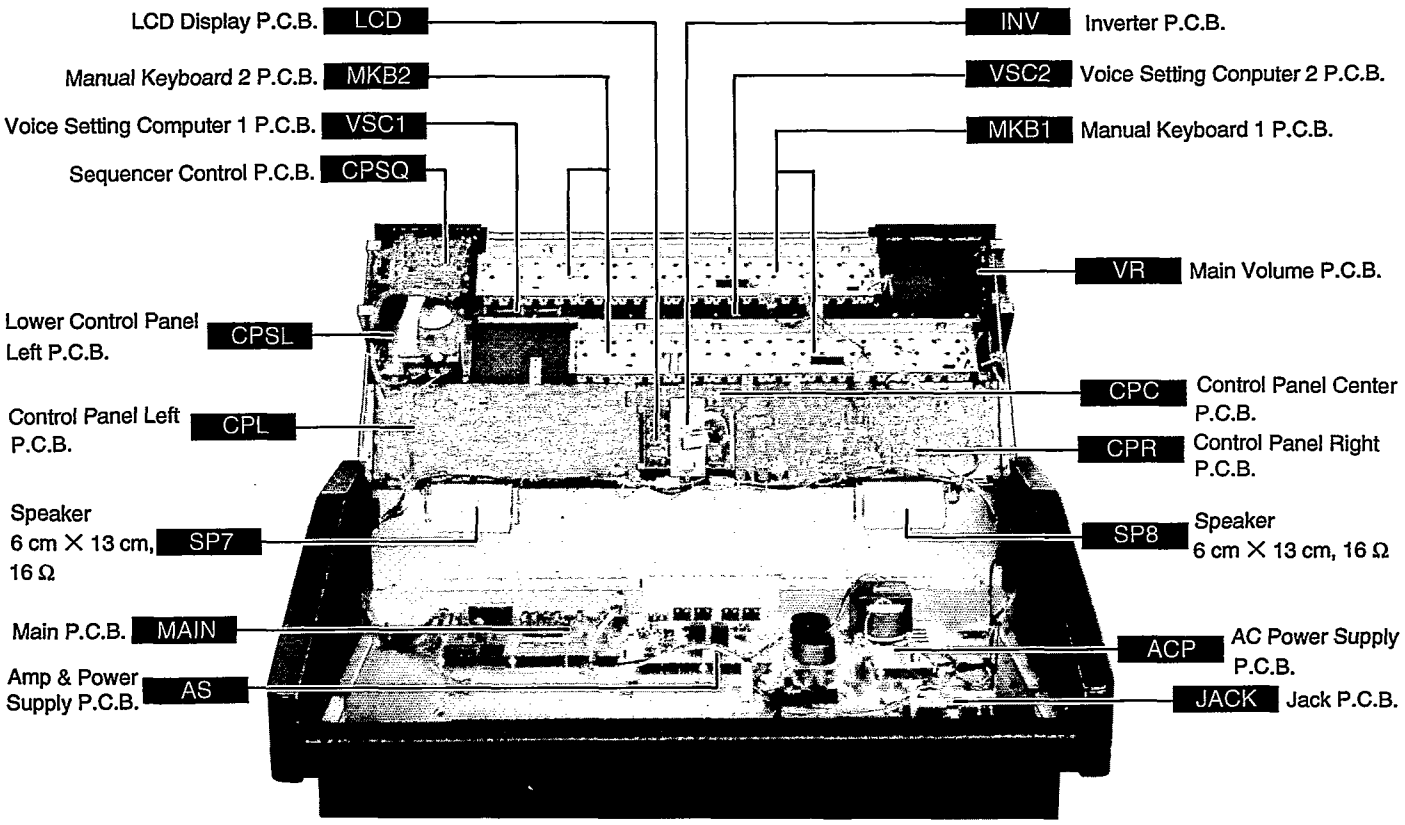
KEYBOARD RANGES

Upper Keyboard: 49 Keys (4 Octaves)
Lower Keyboard: 49 Keys (4 Octaves)
Pedal Keyboard:13 Keys (1Octave) + Full bass Pedal

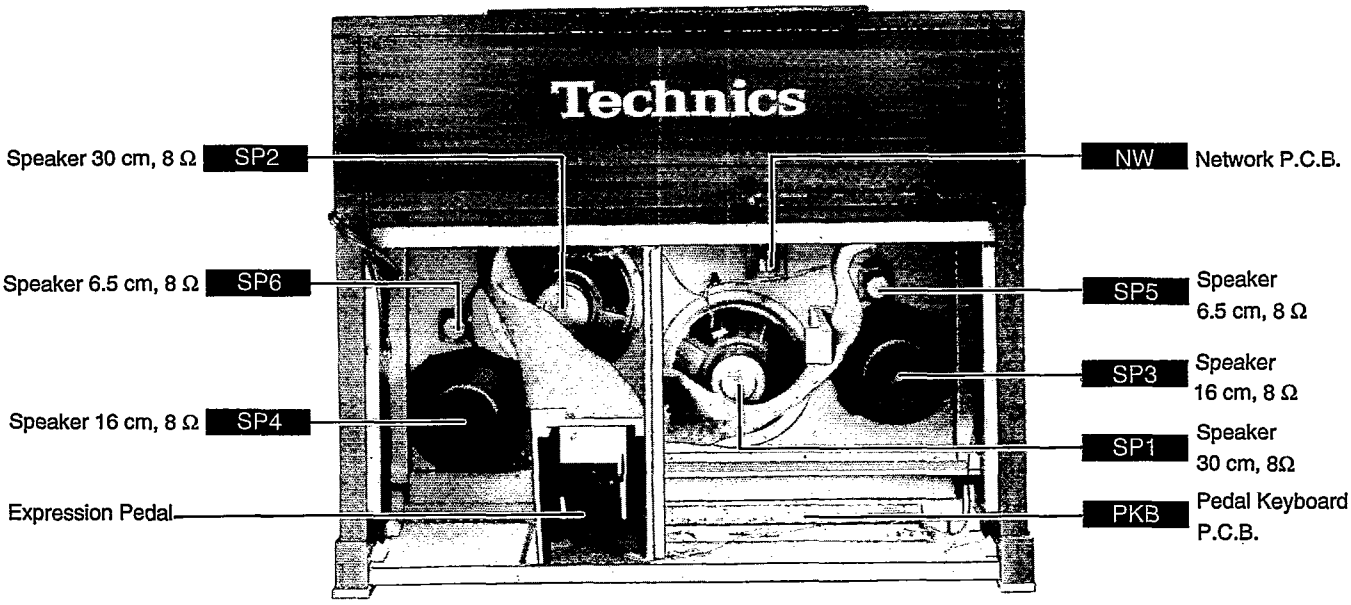
*An 8-foot compass is used for each keyboard


C2 C3 C4 C5 D5 E5 F5 G5 A5 B5 C6
Upper Keyboard
C1 D1 E1 F1 G1 A1 B1 C2 D2 E2 F2 G2 A2 B2 C3 D3 E3 F3 G3 A3 B3 C4 D4 E4 F4 G4 A4 B4 C5
Lower Keyboard
Upper Manual Tone (8')
Lower Manual Tone (8')
Pedal Keyboard
Full bass Pedal
C1 D1 E1 F1 G1 A1 B1 C2
Pedal Keyboard
(Full bass Pedal)

PARTS LOCATION


LCD Display P.C.B. LCD
Manual Keyboard 2 P.C.B. MKB2
Voice Setting Computer 1 P.C.B. VSC1
Sequencer Control P.C.B. CPSQ
Lower Control Panel Left P.C.B. CPSL
Control Panel Left P.C.B. CPL
Speaker 6 cm × 13 cm, 16 Ω SP7
Main P.C.B. MAIN
Amp & Power Supply P.C.B. AS
INV Inverter P.C.B.
VSC2 Voice Setting Conputer 2 P.C.B.
MKB1 Manual Keyboard 1 P.C.B.
VR Main Volume P.C.B.
CPC Control Panel Center P.C.B.
CPR Control Panel Right P.C.B.
SP8 Speaker 6 cm × 13 cm, 16 Ω
ACP AC Power Supply P.C.B.
JACK Jack P.C.B.

[Photo-1]

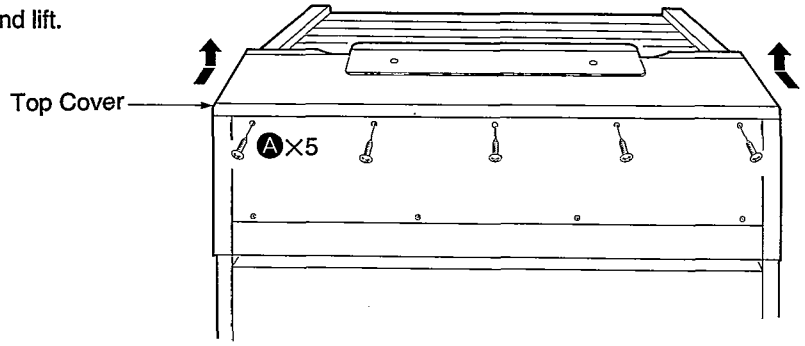

Technics
Speaker 30 cm, 8 Ω SP2
Speaker 6.5 cm, 8 Ω SP6
Speaker 16 cm, 8 Ω SP4
Expression Pedal
NW Network P.C.B.
SP5 Speaker 6.5 cm, 8 Ω
SP3 Speaker 16 cm, 8 Ω
SP1 Speaker 30 cm, 8Ω
PKB Pedal Keyboard P.C.B.

[Photo-2]

DISASSEMBLY INSTRUCTIONS

1 Removing the top cover

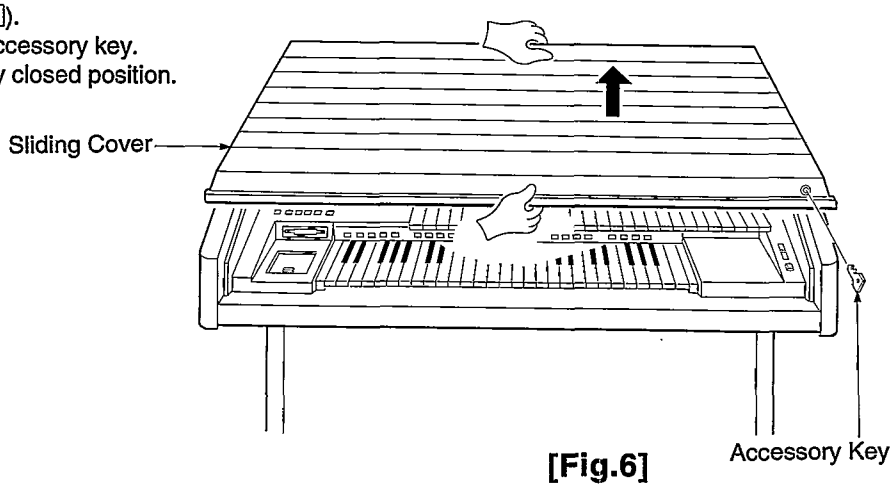
1. Remove the top cover holding screws located on the rear board (Ⓐ 5 pcs.).
2. Remove the top cover, sliding it forward and lift.



[Fig.5]

2 Removing the sliding cover

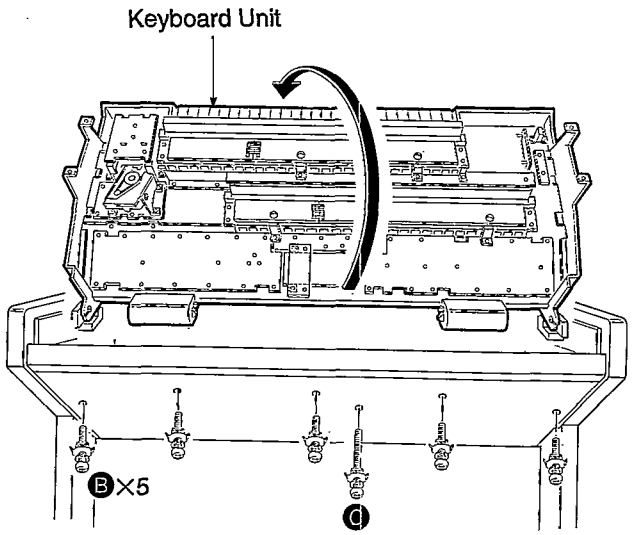
1. Remove the top cover (see Step 1).
2. Unlock the sliding cover with the accessory key.
3. Remove the sliding cover in its fully closed position.



[Fig.6]

3 Opening the control panel with keyboard unit

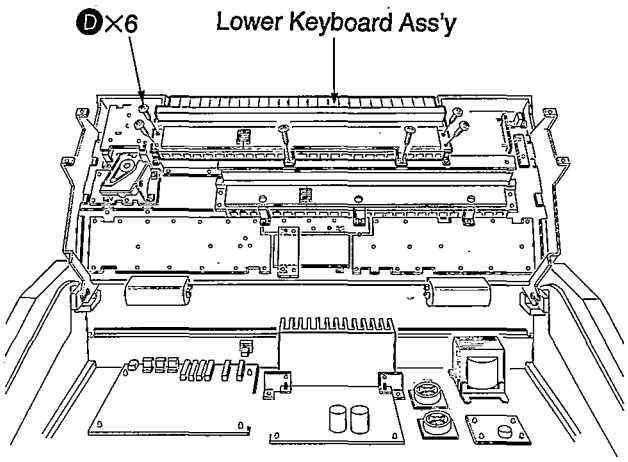
1. Remove both top cover and sliding cover (see Steps 1 and 2).
2. Remove the control panel holding screws located under the upper cabinet (Ⓑ 5 pcs. and Ⓒ 1 pc.).
3. The control panel with keyboard unit can now opened upwards.



[Fig.7]

4 Removing the lower keyboard ass'y

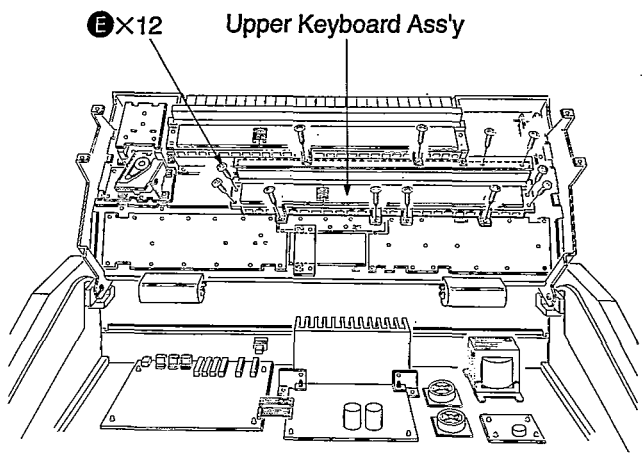
1. Open the control panel with keyboard unit (see Step 3).
2. Remove the lower keyboard ass'y holding screws (Ⓓ 6 pcs.).
3. The lower keyboard ass'y can be removed.



[Fig.8]

5 Removing the upper keyboard ass'y

1. Open the control panel with keyboard unit (see Step 3).
2. Remove the upper keyboard ass'y holding screws (Ⓔ12 pcs.).
3. The upper keyboard ass'y can be removed.



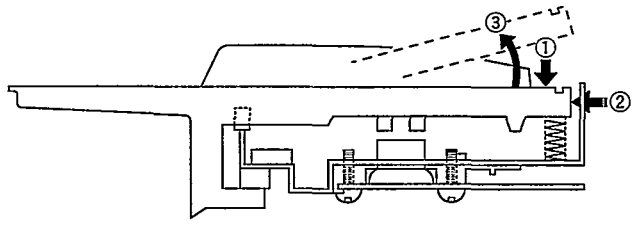
[Fig.9]

6 Removing the keys (s)

1. Remove the keyboard ass'y (see Steps 4 or 5).
2. Press downward on the rear of the key (Fig.10-①).
3. While pressing downward on the rear of the key, push the key forward and release it from the chassis (Fig.10-②.).
4. Lift the key and remove it from the cahssis (Fig.10-③.).

NOTE:

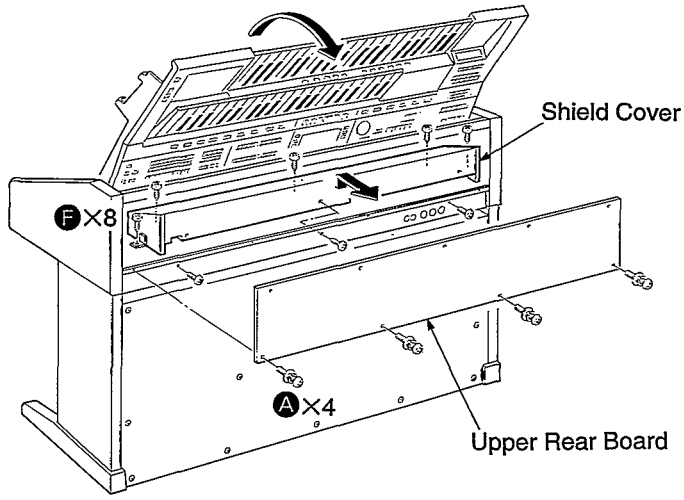
To remove a black key, the white key to either side of it should be removed first.



[Fig.10]

7 Removing the shield cover

1. Open the control panel with keyboard unit (see Step 3).
2. Remove the upper rear board holding screws (Ⓐ 4 pcs.).
3. Remove the shield cover holding screws (Ⓕ 8 pcs.).
4. Remove the shield cover toward the rear.



[Fig.11]

8 Removing the MAIN, AS and ACP P.C.B.

- Open the control panel with keyboard unit (see Step 3).

MAIN P.C.B.

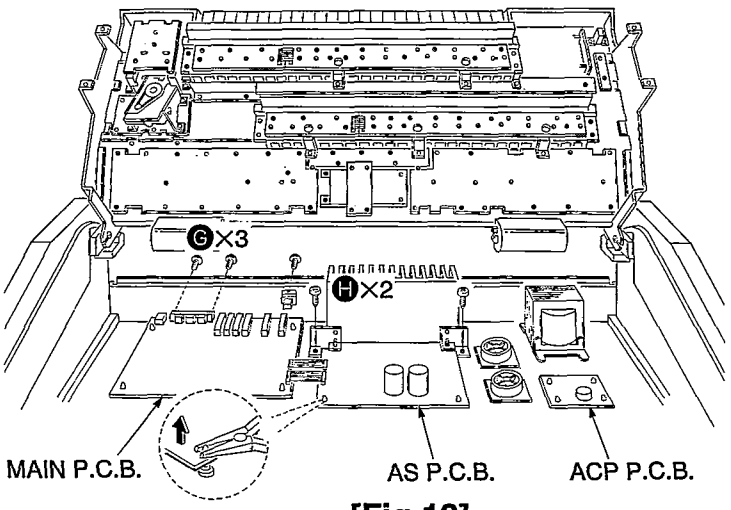
1. Remove the MAIN P.C.B. mounting screws (G 3 pcs.).
2. Release the claws of the P.C.B. holder.

AS P.C.B.

1. Remove the AS P.C.B. mounting screws (H 2 pcs.).
2. Release the claws of the P.C.B. holder.

ACP P.C.B.

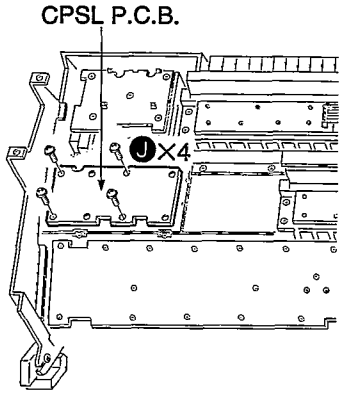
- Release the 4 claws of the P.C.B. holder to remove the ACP P.C.B.



[Fig.12]

9 Removing the digital disk recorder (DDR)

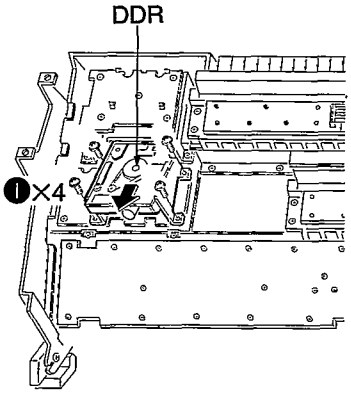
1. Open the control panel with keyboard unit (see Step 3).
2. Remove the DDR holding screws (I 4 pcs.).



[Fig.13]

10 Removing the CPSL P.C.B.

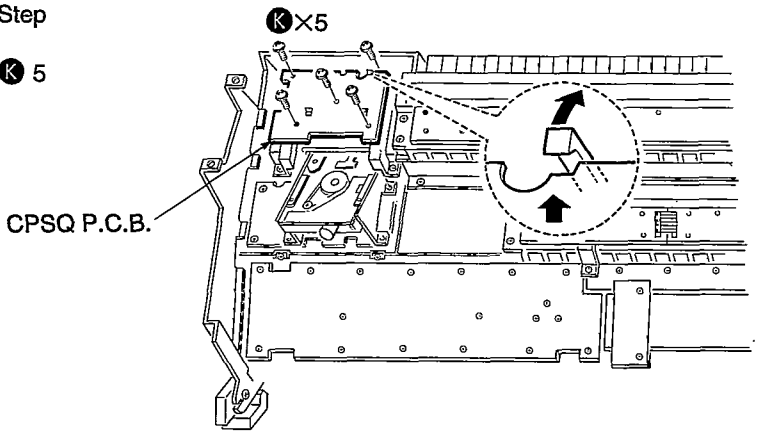
1. Open the control panel with keyboard unit (see Step 3).
2. Remove the DDR (see Step 9).
3. Remove the CPSL P.C.B. mounting screws (J 4 pcs.).



[Fig.14]

11 Removing the CPSQ P.C.B.

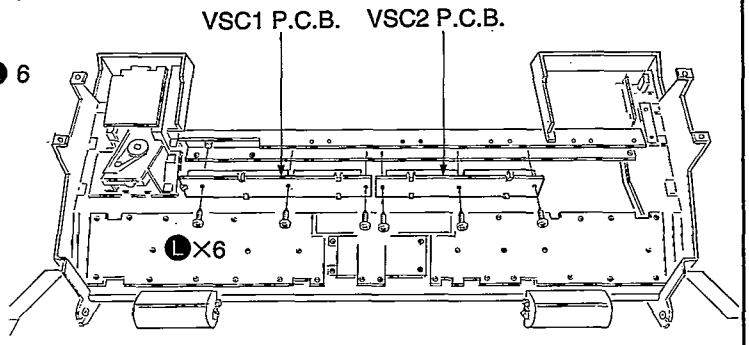
1. Open the control panel with keyboard unit (see Step 3).
2. Remove the CPSQ P.C.B. mounting screws (K 5 pcs.).
3. Release the claws of the P.C.B. holder.



[Fig.15]

12 Removing the VSC 1, 2 P.C.B.

1. Open the control panel with keyboard unit (see Step 3).
2. Remove the upper keyboard (see Step 5).
3. Remove the VSC 1, 2 P.C.B. mounting screws (Ⓛ 6 pcs.).



[Fig.16]

13 Removing the speakers

- Remove the lower rear board mounting screws (Ⓜ 19 pcs.).

30 cm speakers

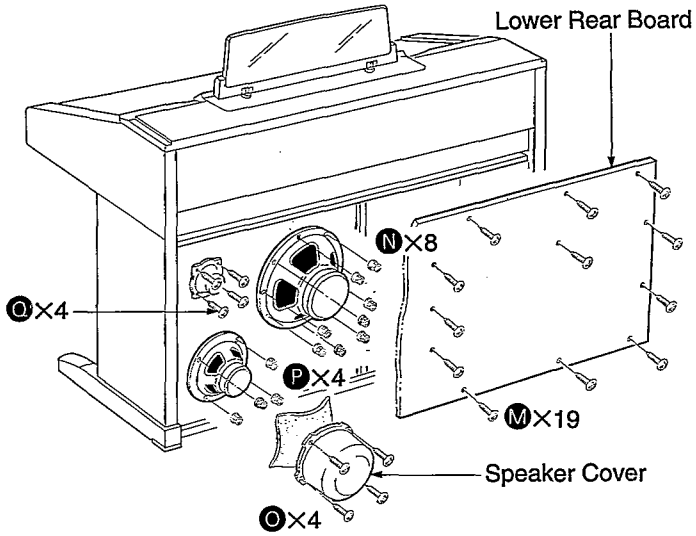
- Remove the 30 cm speaker mounting nuts (Ⓝ 8 pcs.).

16 cm speakers

1. Remove the speaker cover mounting screws (Ⓞ 4 pcs.).
2. Remove the 16 cm speaker mounting nuts (Ⓟ 4 pcs.).

6.5 cm speakers

- Remove the 6.5 cm speakers mounting screws (Ⓠ 4 pcs.).



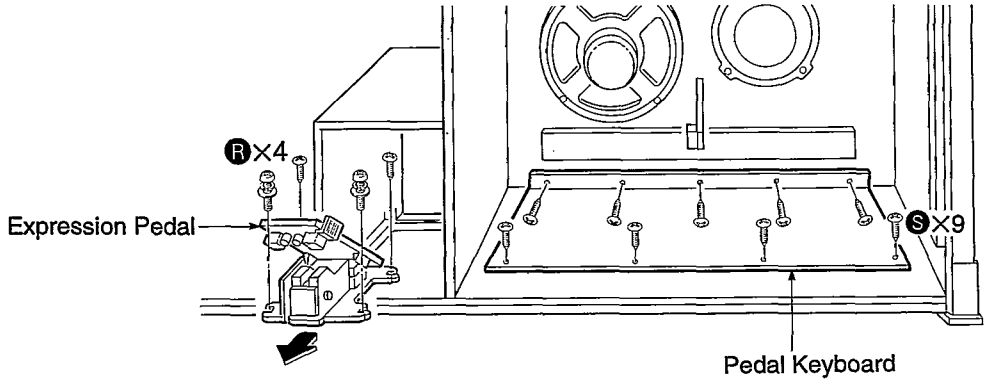
[Fig.17]

14 Removing the expression pedal

1. Remove the lower rear board (see Step 13).
2. Remove the expression pedal mounting screws (Ⓡ 4 pcs.).

15 Removing the pedalkeyboard

1. Remove the lower rear board (see Step 13).
2. Remove the pedal keyboard mounting screws (Ⓢ 4 pcs.).
3. Tilt the entire unit a little to toward to the rear very carefully for easier to take the pedal keyboard out from the bottom wood board.



[Fig.18]

ERROR DISPLAY

The following messages on the display indicate that a mistake has been made in using the functions.

No.	Contents
00	The data on the disk that you are using is for a different product.
01	An error has occurred while the disk was loading. Please try again!
02	There is no disk in the Disk Drive.
03	The file that you tried to load is empty.
05	An error has occurred while the disk was saving. Please try again!
06	The disk that you are using is write protected. Please remove the write protection and try again.
07	The disk that you are using is full. Please use another disk.
08	An error has occurred while the disk was formatting. The disk that you are using may be faulty. Please try formatting another disk.
10	The data is already copy protected.
11	The password that you entered is incorrect.
20	A problem has occurred with your **SEQUENCER** Data. This might be due to a damaged or faulty disk.
21	Memory full
22	It is necessary to press PUNCH OUT to complete this procedure.
23	It is impossible to change the time signature because it has already been set in the existing tracks.
24	A rhythm track already exists. It is impossible to assign two tracks to rhythm.
25	It is only possible to change the velocity on a melody track.
26	It is only possible to merge melody tracks. Tracks such as rhythm, chord and control cannot be merged.

No.	Contents
27	It is only possible to copy melody tracks. Tracks such as rhythm, chord and control cannot be copied.
28	This song is too long to be saved as a MIDI file.
29	The MIDI file that you have tried to load exceeds the memory capacity of this organ and cannot be played. The **SEQUENCER** memory has been cleared.
30	It is not possible to change the time signature or measure length of a **COMPOSER** pattern after it has been recorded. If you want to proceed, you must first clear the entire **COMPOSER** pattern.
31	The time signature of the pattern from which you are copying is different from the **COMPOSER** memory that you are using. Either: Change the time signature of the **COMPOSER** memory or: Copy from a pattern that has the same time signature.
32	Memory full
40	The Identification (ID) code of the system exclusive data received by this organ is for a different product.
41	An error has occurred during system exclusive data reception. The data from the transmitting device may be incomplete. Please try again.
42	An error has occurred during system exclusive transmission. The data has not been received correctly. Please try again.
43	The file that you are trying to load was saved on a previous Technics Organ. It is only possible to load using the "ALL" option.
44	It is impossible to edit a Drum Kit. Please select a different sound from any group except Keyboard Percussion.

SYMPTOMS WHICH APPEAR TO BE SIGNS OF TROUBLE

The following changes in performance may occur in Technics organ but do not indicate trouble.

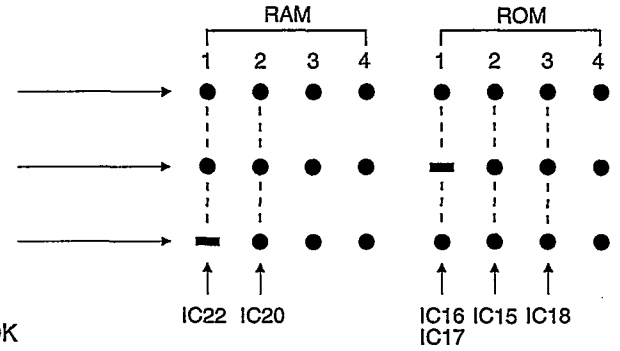
	Phenomenon	Remedy
Sounds and effects	The buttons, keys, etc. malfunction.	• Turn off the **POWER** button once, then turn it on again. If this procedure is not successful, turn off the **POWER** button once. Then, while pressing the three lower left buttons in the **RHYTHM GROUP** section (**ROCK/DISCO**, **MODERN ROCK** and **ROCK [OTHERS]**) at the same time, turn the **POWER** button on again. (Note that, in this case, all programmable settings, functions and memories return to their factory-preset status.)
	No sound is produced when the keys are pressed.	• The **MAIN VOLUME** is at the minimum setting. Adjust the volume with the **MAIN VOLUME** control. • The volumes for the selected parts are set to the minimum levels. Use the balance buttons to set the volumes of the relevant parts to appropriate levels. • The local control for a part performed on the keyboard is set to OFF. Set the local control to ON.
	The volume is very low when the keyboard is played.	• The volume setting in the **SEQUENCER** contents is very low. Follow the **INITIAL** procedure to reset the settings.
	Some sounds cannot be selected.	• When the GENERAL MIDI mode is set to ON, the sounds which can be selected and operations which can be exectuted are limited. Set the GENERAL MIDI mode to OFF to return the instrument to its normal operation.
	Only percussive instrument sounds are produced when the lower keyboard is played.	• The **KEYBOARD PERCUSSION** button is on.
	The knee lever, foot switch(es) and full bass pedal do not operate properly. For example, the knee lever does not turn the **SUSTAIN** function on and off.	• Any functional on and off operation other than the factory presets are storable in these switches. For example, the knee lever can turn the **TECHNI-CHORD** on and off. Store your favorite functions to turn them on and off.
Rhythm	The rhythm does not start.	• The **DRUMS** volume is set to the minimum level. Use the balance buttons to set the **DRUMS** volume to an appropriate level. • In the **RHYTHM GROUP** section, a rhythm in **COMPOSER A** or **COMPOSER B** with no stored pattern was selected. Select a different rhythm. • A **SEQUENCER** track button is on. When you are not playing back the **SEQUENCER** performance, turn off the track buttons. • CLOCK is set to MIDI. Set CLOCK to INTERNAL. • The rhythm does not work when the GENERAL MIDI mode is set to ON. Set the GENERAL MIDI mode to OFF.

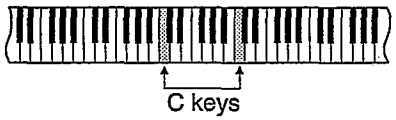
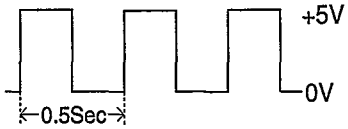
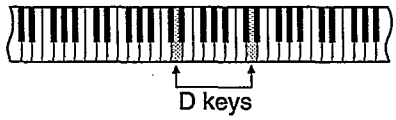
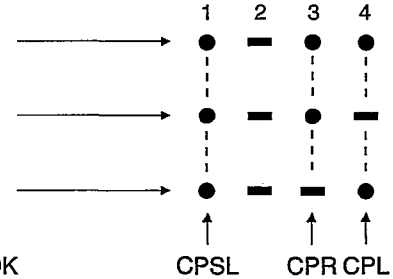
	Phenomenon	Remedy
SEQUENCER	Storage is not possible.	• The remaining memory capacity of the **SEQUENCER** is 0. Follow the SONG CLEAR or TRACK CLEAR procedure to erase the memory.
	Multi-track storage is not possible.	• The playback track has been selected, but the **START/STOP** button has not been pressed. A flashing track indicator shows the track which is ready for recording, and a lit track indicator shows a track which is ready for playback. To record one track while listening to another (playback) track, press the **START/STOP** button to begin playback.
	The playback measure indication is different from when the performance was recorded.	• The number of measures corresponds to the time signature of the rhythm selected at the start of recording. To change the rhythm in the middle of the song, record the rhythm change in the RHYTHM part.
AUTO PLAY CHORD	No sound is produced for the automatic accompaniment.	• In the **RHYTHM GROUP** section, a rhythm in **COMPOSER A** or **COMPOSER B** with no stored pattern was selected. Select a different rhythm.
	No sound is produced for the automatic accompaniment, or only the sounds of some parts are produced.	• Some or all of the **ACCOMP 1**, **2** and **3** buttons are turned off. Press the buttons to turn them on.
COMPOSER	Storage is not possible.	• The remaining memory capacity of the **COMPOSER** is 0.
	Setting the time signature and number of measures is not possible.	• The time signature and number of measures cannot be changed for a pattern which is currently recorded in the **COMPOSER**. If you wish to change the time signature and/or measure data, first follow the procedure to clear the memory.
	The playback timing of the rhythm pattern is different from the timing with which it was recorded.	• The QUANTIZE function was on when the pattern was recorded and the timing was automatically corrected. Set the quantize level to a smaller note unit or to OFF when recording.
Disk Drive	The Disk Drive produces a noise during recording or playback.	• This occurs when the Disk Drive is reading a disk. It does not indicate a problem.
	When the procedure to load from a disk is performed, the contents of the keyboard memory are erased.	• When performing the load operation from a disk, the keyboard memory changes to that of the data loaded from the disk. If you wish to preserve a song which is stored in the keyboard memory, save it on a disk before performing the load procedure.
Other	Noise from a radio or TV can be heard.	• This sometimes occurs when electrical equipment such as a radio or TV is used near the instrument. Try moving such electrical equipment further away from the instrument. • The sound may be coming from a nearby broadcast station or amateur radio station. If the sound is bothersome, consult your dealer or service center.
	The cabinet becomes warm during use.	• This instrument has a built-in power source that heats the cabinet to some degree. This is not an indication of trouble.

ABOUT THE SELF-DIAGNOSTIC FUNCTION

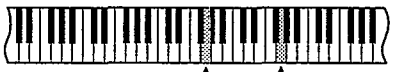
This model has some self-diagnostic capabilities. When set to the self-diagnostic mode, operation of various components can be verified by following the procedures in the chart below.

<table>
<tr><th>No.</th><th>PCB</th><th>TEST MODE</th><th>Procedure</th></tr>
<tr><td>1</td><td>MAIN</td><td>RAM (IC20, 22), ROM (IC15-18) check</td><td>1. Connect the CHECKING DEVICE (refer to page I-18) to CN 1 on the MAIN P.C.B., and turn on the CHECKING DEVICE switch.
2. Turn on the power switch.</td></tr>
<tr><td colspan="4">When the power switch is turned on, the LED of the CHECKING DEVICE flashes 8 times. The first 4 flashes are for the RAM check, and the latter 4 flashes are for the ROM check. The order of the LED flashes corresponds to the respective IC numbers as shown below. If an IC is defective, the corresponding flash time is longer.

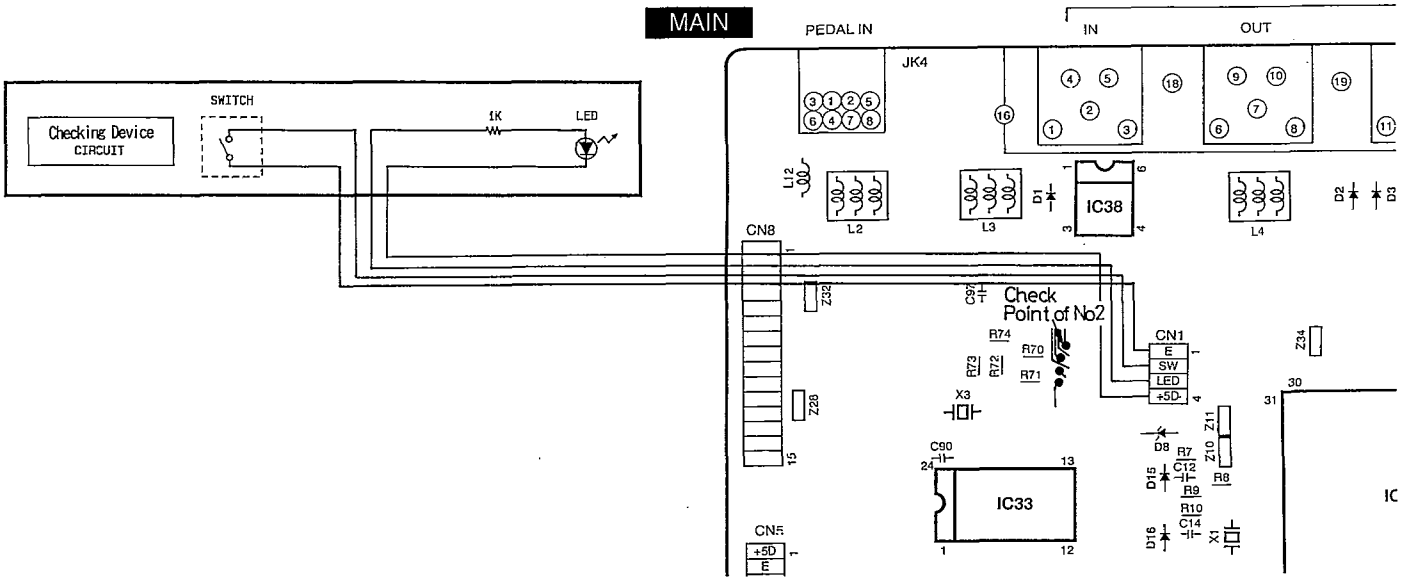
Examples
1. RAM OK, ROM OK
2. RAM OK, ROM (IC16,17) defective
3. RAM (IC22) defective, ROM OK
 

NOTE : ● indicates short flash time = OK
▬ indicates long flash time = Defective</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">MAIN</td><td>V53 Gate Array (IC2) check</td><td>Press and hold the two C keys shown below, and then turn on the power switch.
Lower Keyboard
 
</td></tr>
<tr><td>Monitor pins (refer to page I-18) on oscilloscope, and check whether data (see figure) is output.
 
</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">CPL
CPR
CPSL</td><td>Control panel CPU check</td><td>1. Connect the CHECKING DEVICE to CN 1 on the MAIN P.C.B. (The Checking Device switch should be off).
2. On the control panel, set all the sliding BALANCE controls to OFF.
3. Press and hold the two D keys shown below, and then turn on the power switch.
Lower Keyboard
 
</td></tr>
<tr><td colspan="3">When the power switch is turned on, the LED of the CHECKING DEVICE flashes 4 times. The order of the LED flashes corresponds to the CPU (IC) on the respective P.C.B.s as shown below. If an IC is defective, the corresponding flash time is longer.
1. OK
2. CPL CPU defective
3. CPR CPU defective
 

NOTE : ● indicates short flash time = OK
▬ indicates long flash time = Defective</td></tr>
</table>

<table>
<tr><th>No.</th><th>PCB</th><th>TEST MODE</th><th>Procedure</th></tr>
<tr><td>4</td><td>MAIN</td><td>Wave ROM check
MAIN : IC23- 29, 31</td><td>1.Press and hold the two E keys shown below, and then turn on the power switch.
2.Press the SYNTH PAD (LOWER SOUND GROUP) button.
Lower Keyboard
E keys</td></tr>
<tr><td colspan="2"></td><td colspan="2">When set to the self-diagnostic mode, the Wave ROM outputs a sine wave. The Wave ROMs correspond to the keyboard keys as shown in the diagram to the right. When a key is pressed, the corresponding sine wave sound is produced. If no sound is produced, or if the sound is distorted, the Wave ROM corresponding to that key is defective.
• The key number indicates the Wave ROM number. (1:IC23, 2:IC24, 3:IC25, 4:IC26, 5:IC27, 6:IC28, 7:IC29, 8:IC31)
Upper Keyboard
<table>
<tr><th>Key / Upper Conductor</th><th>C</th><th>C#</th><th>D</th><th>D#</th><th>E</th><th>F</th><th>F#</th><th>G</th><th>-</th><th>B</th></tr>
<tr><td>Upper Organ</td><td>1</td><td>2</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td></tr>
<tr><td>Upper Sound 1</td><td>4</td><td>5</td><td>6</td><td>6</td><td>6</td><td>6</td><td>6</td><td>6</td><td>6</td><td>6</td></tr>
<tr><td>Upper Sound 2</td><td>7</td><td>–</td><td>7</td><td>–</td><td>7</td><td>–</td><td>7</td><td>–</td><td>–</td><td>–</td></tr>
<tr><td>Upper Sound 3</td><td>8</td><td>–</td><td>8</td><td>–</td><td>8</td><td>–</td><td>8</td><td>–</td><td>–</td><td>–</td></tr>
</table>
</td></tr>
<tr><td>5</td><td>CPL
CPR
CPSQ</td><td>LED & SW check</td><td>Press and hold the two F keys shown below, and then turn on the power switch.
Lower Keyboard
F keys</td></tr>
<tr><td colspan="2"></td><td colspan="2">All the LEDs turn off after lighting once. Confirm that all the LEDs light.</td></tr>
<tr><td>6</td><td>LCD</td><td>LCD Display check</td><td>Press and hold the two G keys shown below, and then turn on the power switch.
Lower Keyboard 
G keys</td></tr>
<tr><td colspan="2"></td><td colspan="2">All dots of the LCD screen light for 10 seconds, after which 10 different displays appear in succession.</td></tr>
</table>

■ Connection between serving CHECKING DEVICE and MAIN P.C.B.



MIDI IMPLEMENTATION CHART

Organ [SX-GA3] **(Transmitted)**

Function		U.SOUND1,2,3, L.SOUND2,3, PART8～15	BASS (PEDAL)	L. SOUND1	K.B PERC (PART16)	U. ORGAN	L. ORGAN	ACMP1, ACMP2, ACMP3, BASS	DRUMS	CHORD	CONTROL	Remarks
Basic Channel	Default	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	memorized
	Changed	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	
Mode	Default	3	3	3	3	3	3	3	3	3	3	OMNI OFF,POLY MODE
	Messages	×	×	×	×	×	×	×	×	×	×	
	Altered	–	–	–	–	–	–	–	–	–	–	
Note Number		0-119	0-119	0-119	0-119	0-119	0-119	0-119	0-119	0-119	–	Changes depending on the position of the transpose control,octave shift,and drums type.
	True voice	–	–	–	–	–	–	–	–	–	–	
Velocity	Note ON	○	○	○	○	○	○	○	○	○	–	
	Note OFF	×	×	×	×	×	×	×	×	×	–	
After Touch	Key's	×	×	×	×	×	×	×	×	×	–	
	Ch's	○×*	○×*	○×*	×	×	×	×	×	×	–	
Pitch Bender		○*	○*	○*	×	○	○	○*	×	×	×	
Control Change	0,32	○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	bank select MSB, LSB
	1	○*	○*	○*	×	×	×	○*	×	○×*	×	modulation
	6,38	○×*	○×*	○×*	×	×	×	×	×	×	×	data entry MSB, LSB
	7	○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	volume
	10	○×*	○×*	○×*	×	×	×	×	×	×	×	panpot
	11	○×*	○×*	○×*	○×*	○×*	○×*	×	×	×	○×*	expression
	64	○×*	○×*	○×*	×	○×*	○×*	○×*	×	×	×	sustain
	80	×	×	○×*	×	×	×	×	×	×	×	auto play chord
	82	×	×	×	×	×	×	×	○×*	×	×	intro, fill in, ending
	91	○×*	○×*	○×*	○×*	×	×	×	×	○×*	○×*	reverb
	92	×	×	×	×	○×*	○×*	×	×	×	×	tremolo
	93	○×*	○×*	○×*	×	×	×	○×*	×	○×*	×	digital effect
	94	○×*	×	○×*	×	○×*	○×*	×	×	×	×	DSP effect／effect
	100,101	○×*	○×*	○×*	×	×	×	×	×	×	×	RPN LSB, MSB
	120	○	○	○×*	○	○	○	×	×	×	×	all sound off
	121	○×*	○×*	○×*	○×*	○×*	○×*	×	×	×	×	reset all controllers
Prog Change		○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	Changes depending on program change mode
	True #	–	–	–	–	–	–	–	–	–	–	and prog.cng to p.mem.
System exclusive		○										
System common	Song Pos	○×*										
	Song Sel	○×* (0-19)										
	Tune	×										
System Real Time	Clock	○										
	Commands	○×*										start／stop,continue
Aux Messages	Local ON／OFF	×	×	×	×	×	×	×	×	×	–	
	All notes OFF	×	×	×	×	×	×	×	×	×	–	
	Active Sense	○										
	Repeat	×										

Notes

○×*·····Whether or not the data for each of these items is transmitted can be set.

○*·····Transmitted during SEQUENCER playback and during rhythm performance.

Mode 1: OMNI ON, POLY Mode 2: OMNI ON, MONO ○:Yes

Mode 3: OMNI OFF, POLY Mode 4: OMNI OFF, MONO ×:No

Organ [SX-GA3] **(Recognized)**

Function		U.SOUND1,2,3, L.SOUND2,3, PART8～15	BASS (PEDALS)	L. SOUND1	K.B PERC (PART16)	U. ORGAN	L. ORGAN	ACMP1, ACMP2, ACMP3, BASS	DRUMS	CHORD	CONTROL	Remarks
Basic Channel	Default	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	memorized
	Changed	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	
Mode	Default	3	3	3	3	3	3	3	3	3	3	OMNI OFF,POLY MODE
	Messages	×	×	×	×	×	×	×	×	×	×	
	Altered	–	–	–	–	–	–	–	–	–	–	
Note Number		0-127	0-127	0-127	0-127	0-127	0-127	0-127	0-127	0-127	–	Changes depending on the position of the transpose control,octave shift,and drums type.
	True voice	0-127	0-127	0-127	0-127	0-127	0-127	0-127	0-127	0-127	–	
Velocity	Note ON	○	○	○	○	○	○	○	○	○	–	
	Note OFF	×	×	×	×	×	×	×	×	×	–	
After Touch	Key's	×	×	×	×	×	×	×	×	×	–	
	Ch's	○×*	○×*	○×*	○×*	×	×	×	×	×	–	
Pitch Bender		○×*	○×*	○×*	×	○	○	○×*	×	○×*	×	
Control Change	0,32	○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	bank select MSB, LSB
	1	○×*	○×*	○×*	×	×	×	○×*	×	○×*	×	modulation
	6,38	○×*	○×*	○×*	×	×	×	×	×	×	×	data entry MSB, LSB
	7	○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	volume
	10	○×*	○×*	○×*	×	×	×	×	×	×	×	panpot
	11	○×*	○×*	○×*	○×*	○×*	○×*	×	×	×	○×*	expression
	64	○×*	○×*	○×*	×	○×*	○×*	○×*	×	×	×	sustain
	80	×	×	○×*	×	×	×	×	×	×	×	auto play chord
	82	×	×	×	×	×	×	×	○×*	×	×	intro, fill in, ending
	91	○×*	○×*	○×*	○×*	×	×	×	×	○×*	○×*	reverb
	92	×	×	×	×	○×*	○×*	×	×	×	×	tremolo
	93	○×*	○×*	○×*	×	×	×	○×*	×	○×*	×	digital effect
	94	○×*	×	○×*	×	○×*	○×*	×	×	×	×	DSP effect／effect
	100,101	○×*	○×*	○×*	×	×	×	×	×	×	×	RPN LSB, MSB
	120	○	○	○	○	○	○	○	○	○	×	all sound off
	121	○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	reset all controllers
Prog Change		○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	Changes depending on program change mode and prog.cng to p.mem.
	True #	0-127	0-127	0-127	0-127	0-127	0-127	0-127	0-127	0-127	0-21	
System exclusive		○										
System common	Song Pos	○×*										
	Song Sel	○×* (0-19)										
	Tune	×										
System Real Time	Clock	○										
	Commands	○×*										start／stop,continue
Aux Messages	Local ON／OFF	×	×	×	×	×	×	×	×	×	–	
	All notes OFF	○	○	○	○	○	○	○	○	○	–	
	Active Sense	○										
	Repeat	×										
Notes		○×*……Whether or not the data for each of these items is received can be set.										

Mode 1: OMNI ON, POLY　　Mode 2: OMNI ON, MONO　　○:Yes
Mode 3: OMNI OFF, POLY　　Mode 4: OMNI OFF, MONO　　×:No

PRECAUTIONS BEFORE SERVICING

■ Precautions for measuring of the output waveforms.

1. The waveform was measured with a "National Digital Storage Oscilloscope VP-5730A". Therefore the waveforms of musical tone signals shown may differ somewhat due to the difference in the timing of triggering.
2. Since the 1/10 test probe is used, the indicated voltage value on the bottom part of each waveform photo is 1/10 of the actual value (e.g. 0.2 V/cm should be 2.0 V/cm).
3. To measure the waveforms, first set this unit to the self-diagnostic mode (refer to page I-18, No. 4). The Wave ROM output will then be output as a sine wave to facilitate the servicing check.

■ Important safety notice:

Components identified by a ⚠ mark have special characteristics impotant for safety.
When replacing any of these components, use only manufacture's specified parts.

■ Symbolic Marks

The symbolic marks for resistors and capacitors which used in this circuits are classified as following TABLE-1 and TABLE-2.

1. RESISTORS
   - Resistors without symbolic mark are FIXED CARBON FILM RESISTORS (ERD-type).
   - All resistors are 1/4 WATT, ±5 % TOLERANCE unless otherwise designated in schematic diagrams.

(TABLE-1)

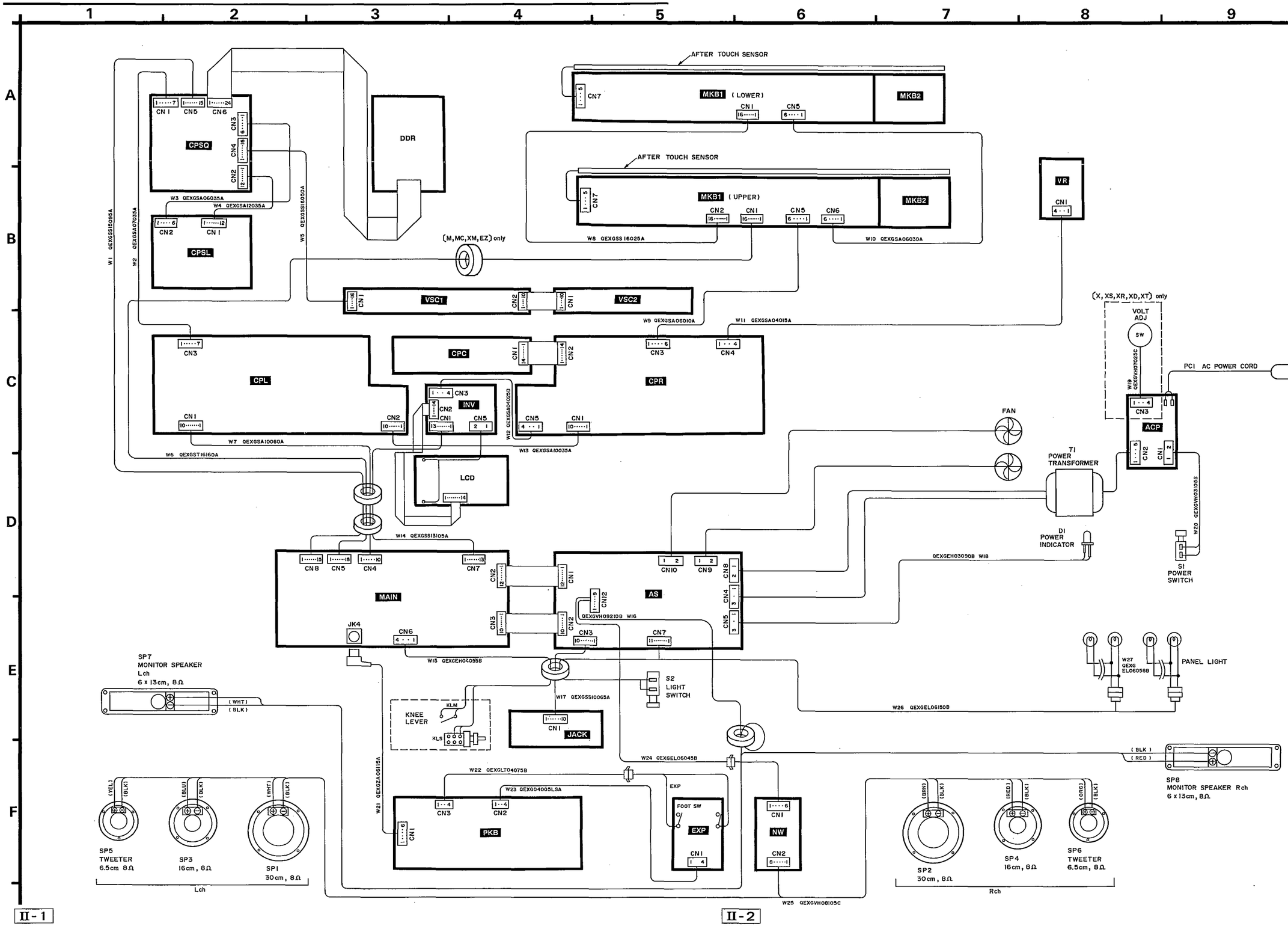
SYMBOL	SPECIFICATION	SYMBOL	SPECIFICATION
Ⓕ	Fixed Carbon Film Resistors " FLAME-PROOF " (ERD—F—type)	Ⓕ	Fixed Metal Film Resistors " FLAME-PROOF " (ERX—type)
Ⓕ	Fixed Wire Wound Resistors " FLAME-PROOF " (ERF—type)	[F]	Fuse Type Fixed Metal Oxide Film Resistors " FLAME-PROOF " (ERQ—type)
Ⓕ	Fixed Metal Oxide Film Resistors " FLAME-PROOF " (ERG—type)	[F]	Fuse Type Fixed Carbon Film Resistors " FLAME-PROOF " (ERD2FC—type)
Ⓖ	Fixed Metal Film Resistors (Precision and High Stability) (ERO—type)		

2. CAPACITORS
   - Capacitors without symbolic mark are POLYESTER CAPACITORS. (ECQM-type, ECQG-type, ±10 % Tolerance)
   - Polarized capacitors without symbolic mark are Aluminum Electrolytic Capapcitors. (ECEA-type, ±20 % Tolerance)

(TABLE-2)

SYMBOL	SPECIFICATION	TYPE
Ⓝ	Non-Polarized Electrolytic Capacitors	ECEA_KN_type
Ⓨ	Non-Polarized Electrolytic (for Network System)	ECEA_Y_type
Ⓣ	Tantalum Solid Electrolytic Capacitors	ECS_type
TF	Metalized Plastic Film Capacitors (TF Series)	ECQV_type
○	Temperature Compensating Ceramic Capacitors	ECC_type
	High-Dielectric Constant Ceramic Capacitors	ECK_type ECR_type
	Axial Lead Ceramic Capacitors	ECB_type
	Metalized Polyester Film Capacitors for Across the Line	ECQ_EW_type
	Aluminum Electrolytic Capacitors for Smoothing Circuit	ECES_type
	Multilayer Ceramic Chip Capacitors	ECUV_type

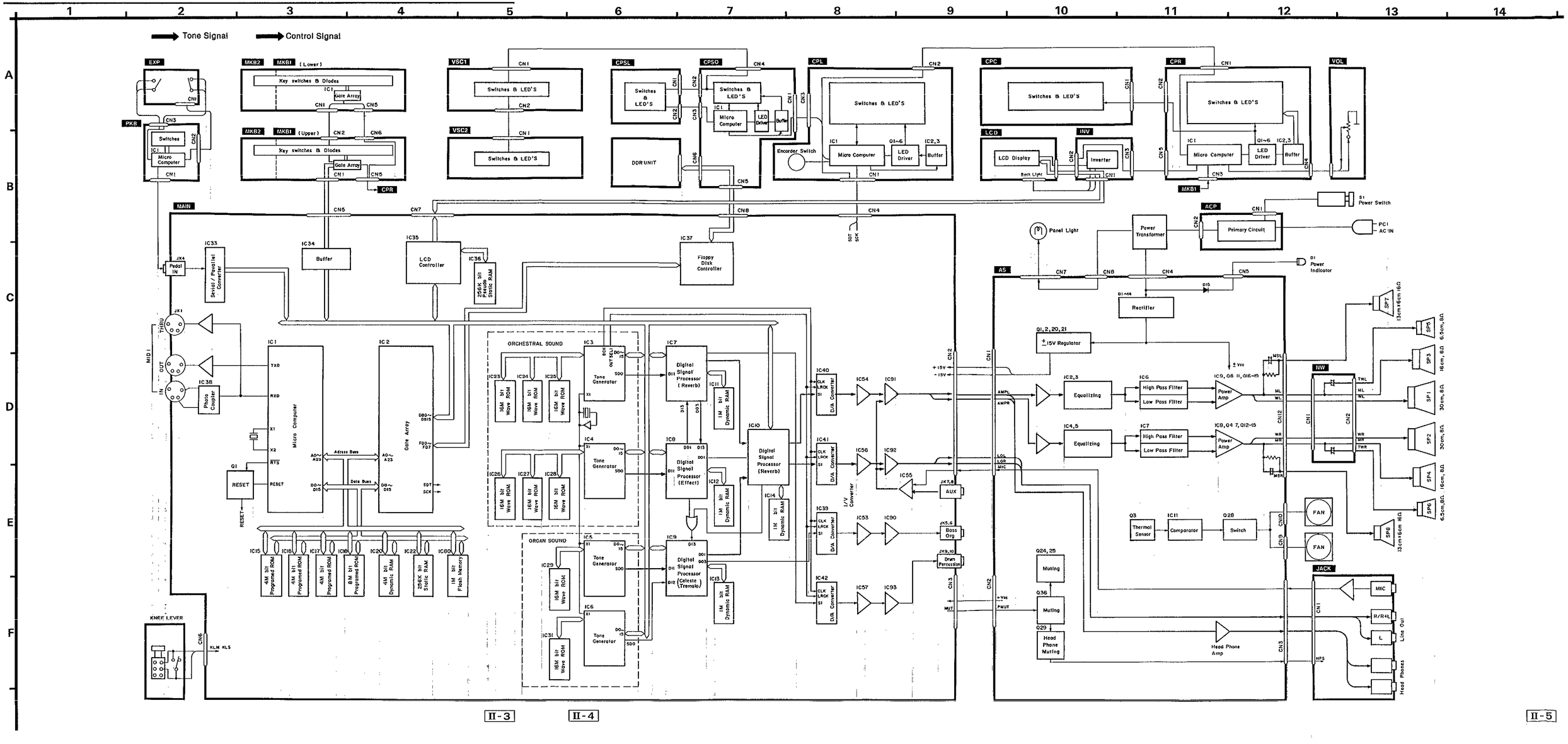
WIRING CONNECTION DIAGRAM



II-1

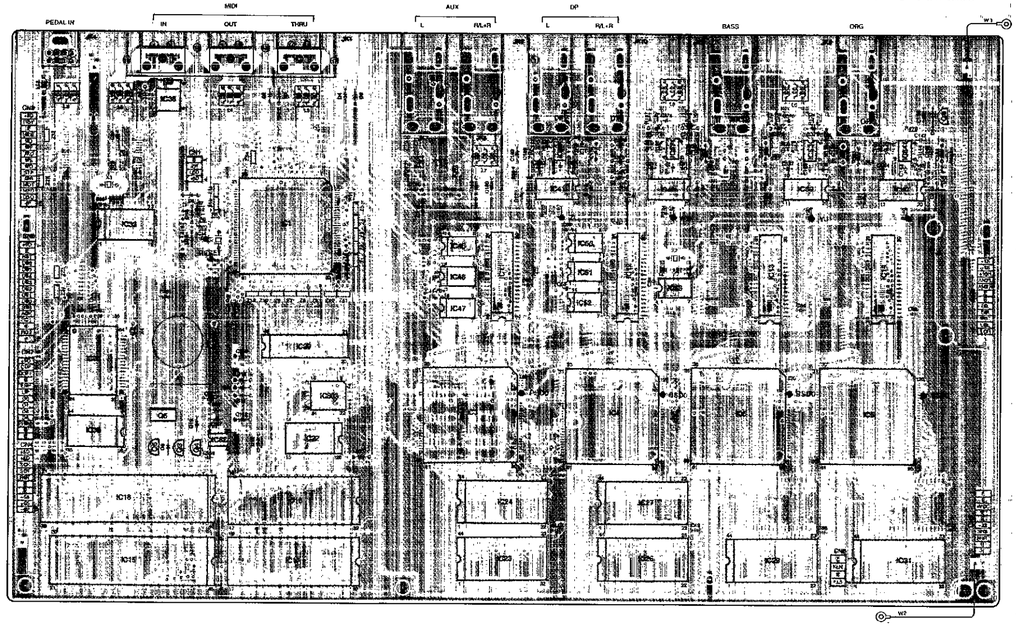
II-2

BLOCK DIAGRAM



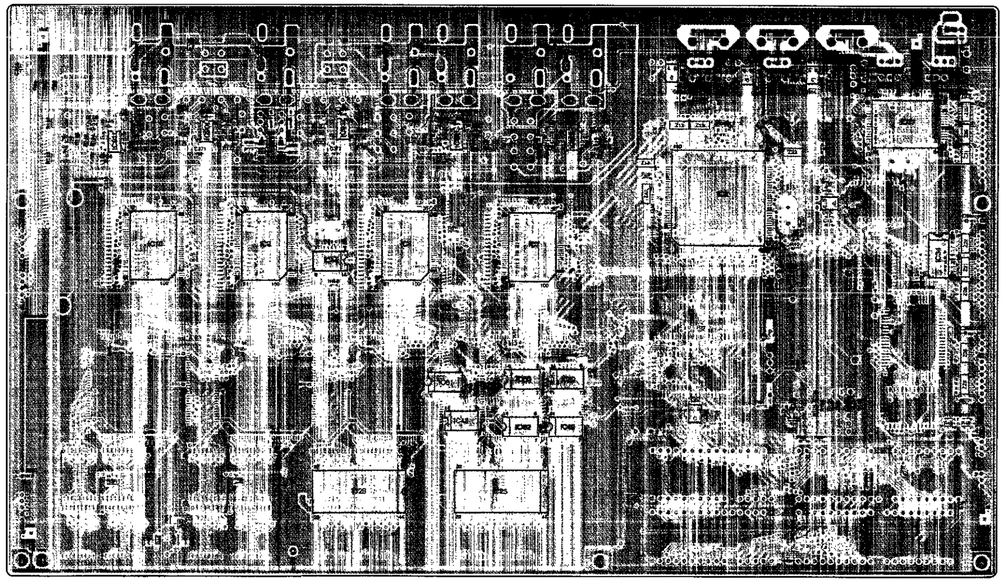
MAIN COMPONENT SIDE

Component Side
Foil Side



MAIN FOIL SIDE

SXPG218311

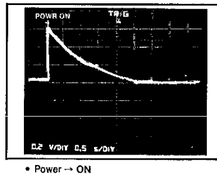


■ **Measuring Condition** ■ 波形の測定条件

Set the initial setting mode (Refer to page Ⅰ-3)
イニシャルセッティングを行ってください。(Ⅰ-3 ページ参照)

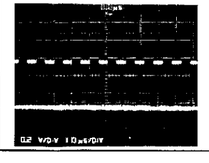
- SOUND ..... LOWER TAB ORGAN 8′, 4′
- TREMOLO ..... ON
- KEYBOARD C3
- RHYTHM ..... Start
- TEMPO ..... ♩ =120

RESET

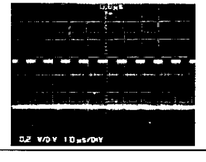


• Power → ON

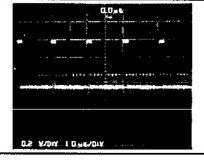
PSDO



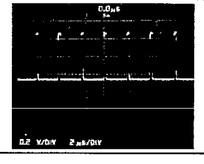
QSDO



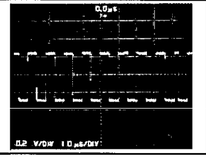
RSDO



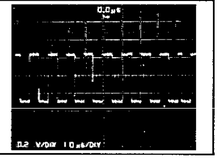
SSDO



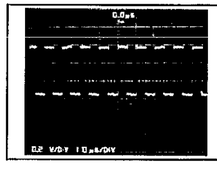
ZL



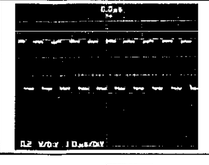
WM



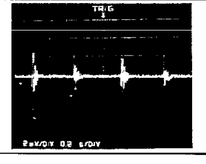
YJ



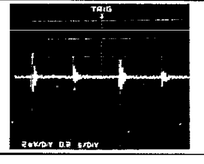
ZK



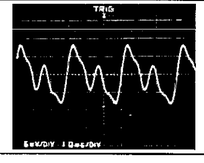
DP1



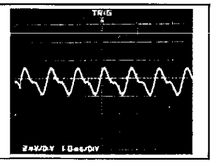
DP2



BASS



ORG



MAIN

NOTES:

- IC'S

IC1:	D70236GD165B	IC45~47, 50~52:	D74HC164GS
IC2:	D65046GD188	IC49:	D74HC393GS
IC3~6:	TC25540AF006	IC53~57, 90~93:	M5218AFP
IC7~10:	D6383GF-3B9	IC59:	D74HC08GS
IC11~14:	M5M411664J8S	IC60:	D74HC32GS
IC15:	QSIGCGA3AX	IC61:	D74HC86GS
IC16:	QSIGCGA3BX	IC62:	D74HC04GS
IC17:	QSIGCGA3CX	IC63:	D74HCU04GS
IC18:	QSIG03C08035	IC80:	AM29F010
IC20:	M5M44170AJ8S	IC82:	BA10393F
IC22:	M5256BFP85LL		
IC23, 26:	QSIGT3C16016		
IC24, 27:	QSIGT3C16017		
IC25, 28:	QSIGT3C16018		
IC29:	QSIGT3C16019		
IC31:	QSIGT3C16020		
IC33:	M66230FP		
IC34:	D74HC244GS		
IC35:	SED1330FBA		
IC36:	HM65256BLF10		
IC37:	D72068GF-3B9		
IC38:	SVIGTLP513		
IC39~42:	PCM69AU		
IC44, 48:	D74HC74GS		

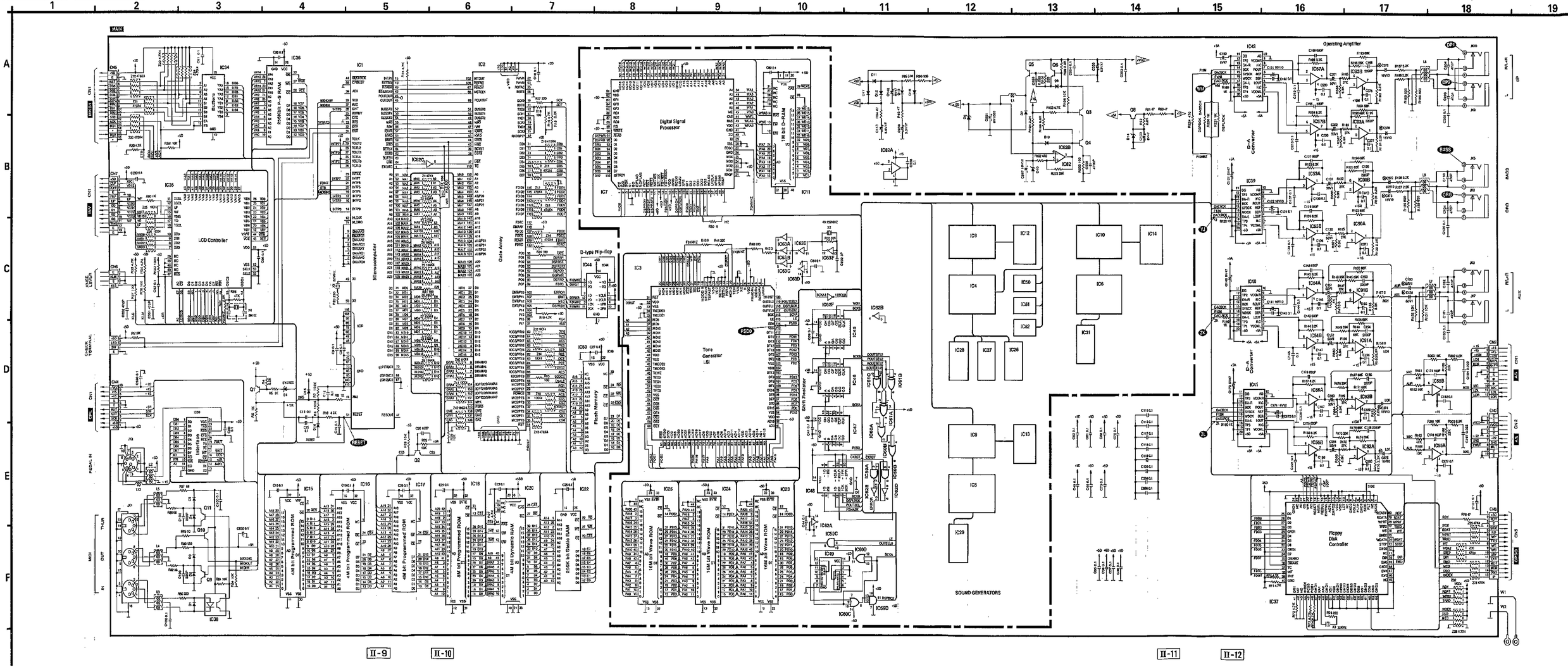
- TRANSISTORS

Q1, 9~11:	2SB709ARTW
Q2:	2SD601AQTW
Q3, 4, 6, 8:	2SC1815GR
Q5:	2SB946P

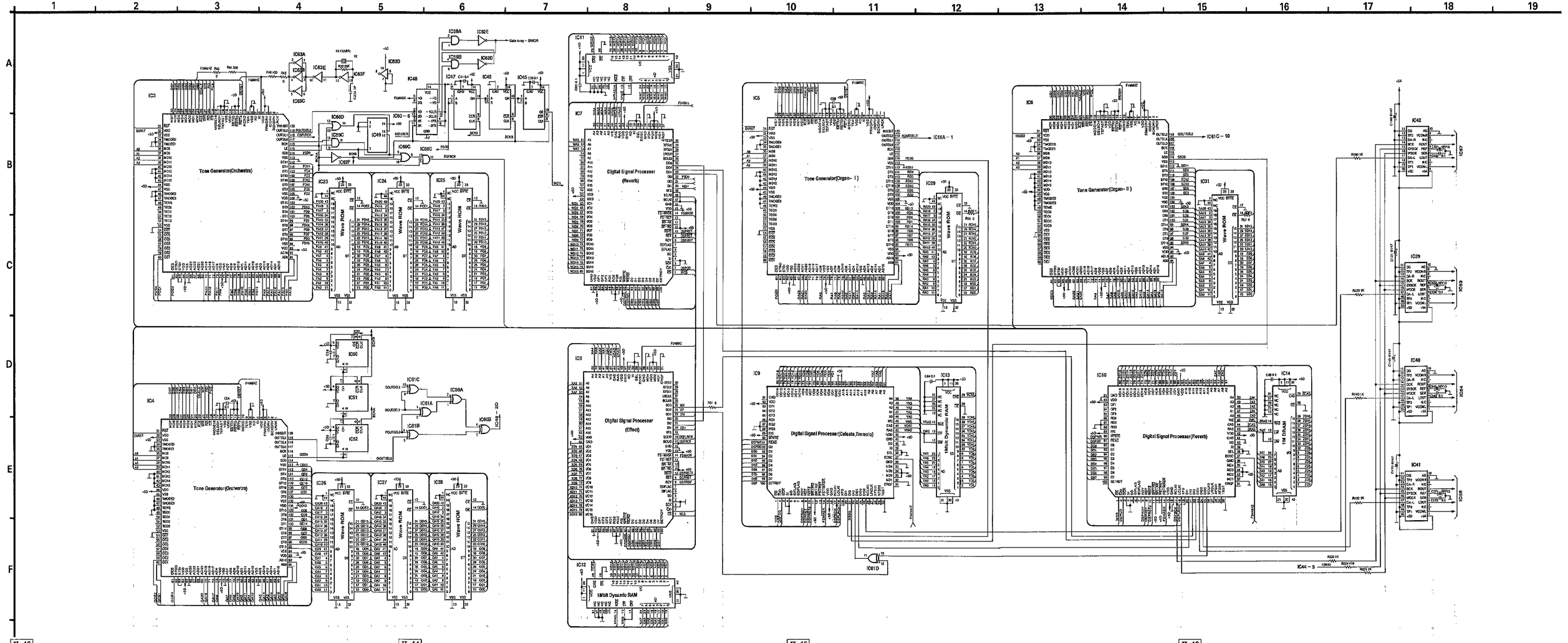
- DIODES

D1~5, 9, 11~13, 15~19:	MA165
D6:	MA2062LF
D7:	SVDGERC9102
D8:	MA1030
D10:	MA4051
D14:	MA4056

MAIN CIRCUIT DIAGRAM



MAIN CIRCUIT SOUND GENERATORS

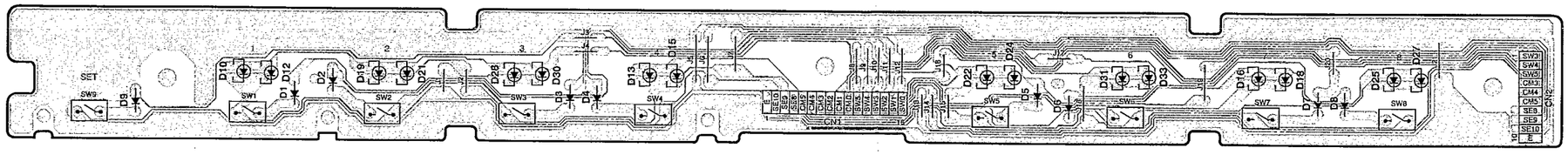


VSC1 VSC2 VOICE SETTING COMPUTER CIRCUIT

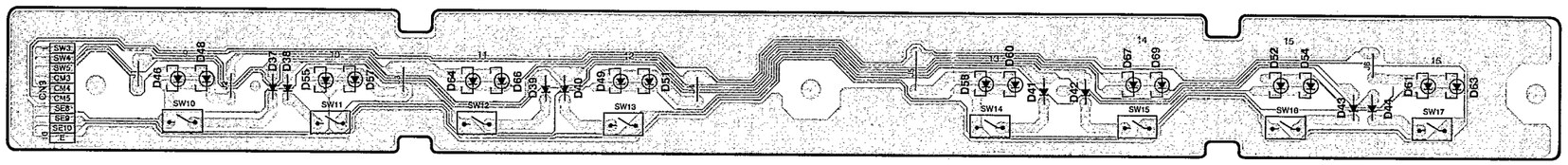
SXPG218511A

SXPG218611B

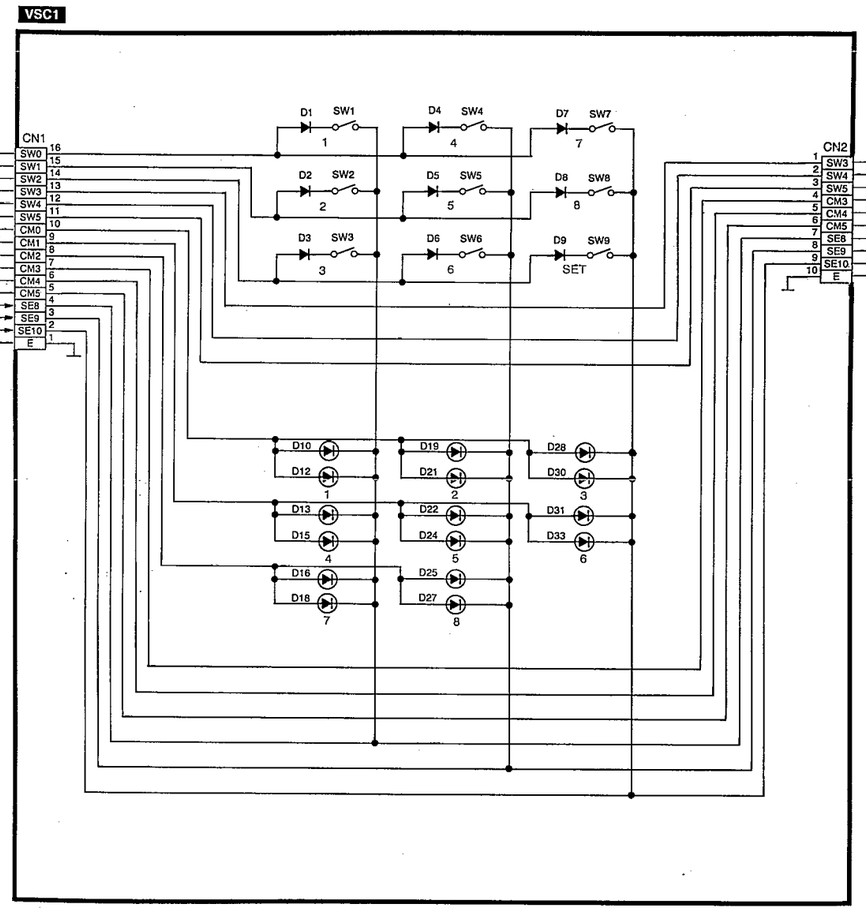
VSC1



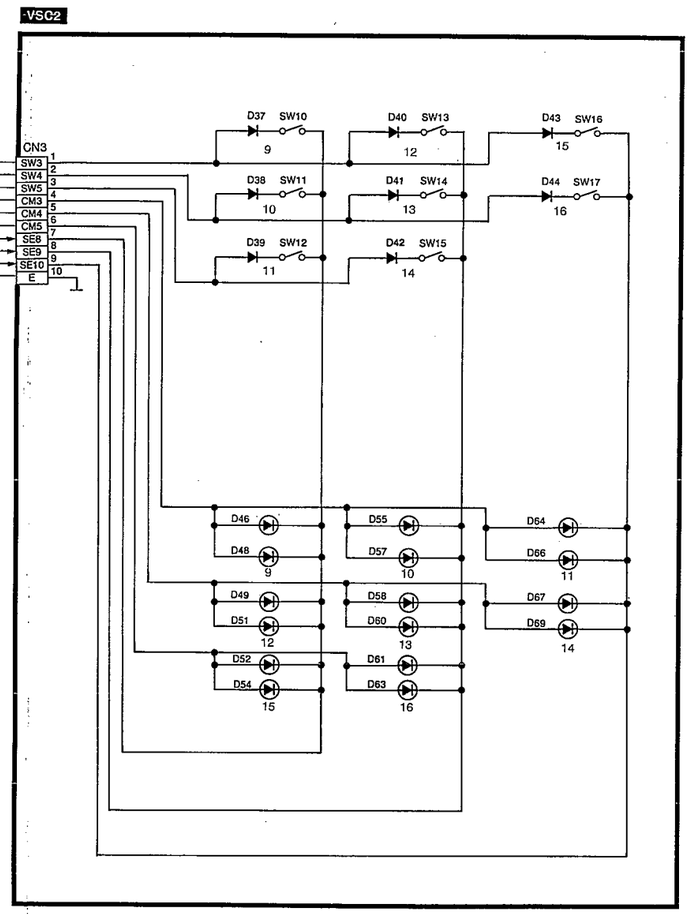
VSC2



VSC1



VSC2



II-17

II-18

VSC1

NOTES:

- DIODES
  - D1~9: MA165
  - D10, 12, 13, 15, 16, 18, 19, 21, 22, 24, 25, 27, 28, 30, 31, 33: SEL6210S
- SWITCHES
  - S1~9: EVQ21907K

VSC2

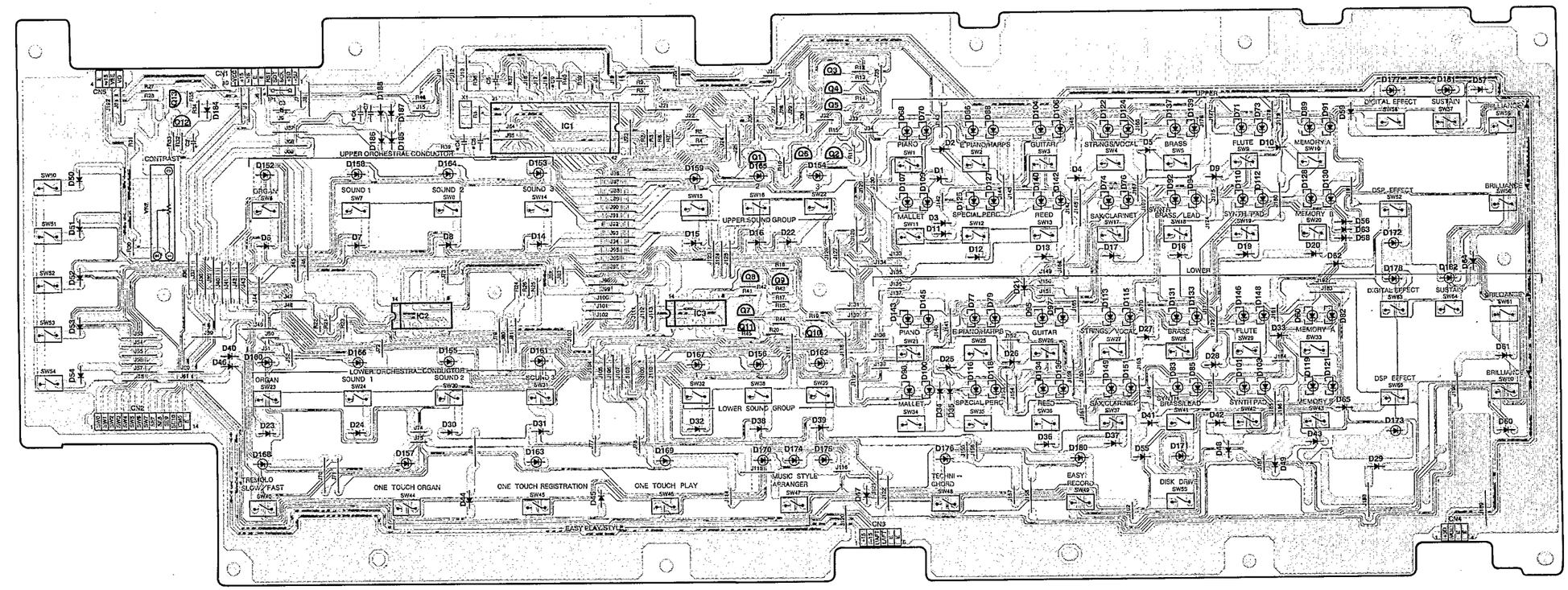
NOTES:

- DIODES
  - D37~44: MA165
  - D46, 48, 49, 51, 52, 54, 55, 57, 58, 60, 61, 63, 64, 66, 67, 69: SEL6210S
- SWITCHES
  - S10~17: EVQ21907K

CPR VR CONTROL PANEL RIGHT, MAIN VOLUME CIRCUIT BOARD

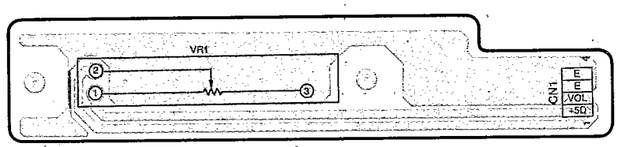
CPR

SXPG218611A



VR

SXPG218711D

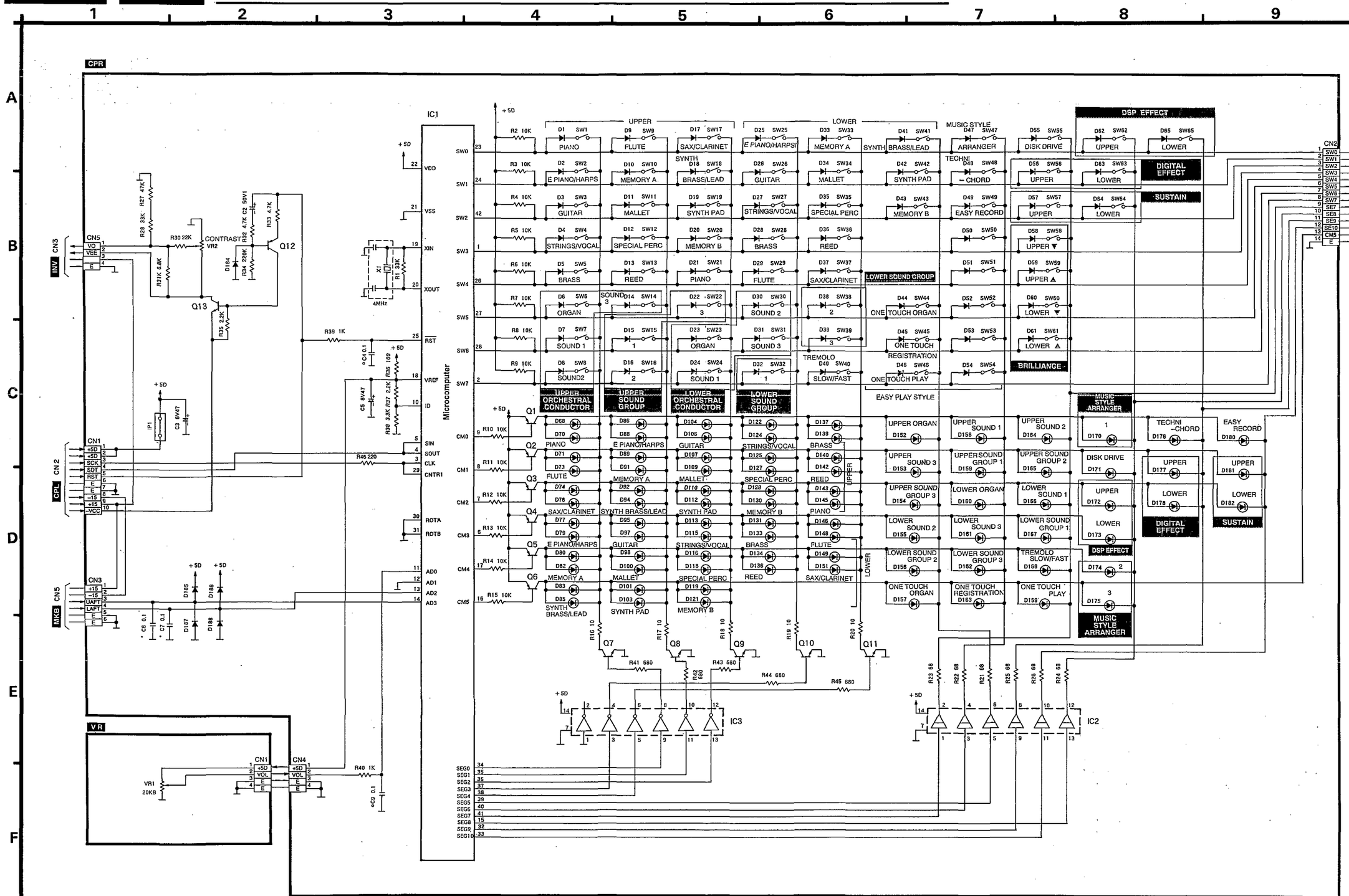


CPR

NOTES:

- IC'S
  - IC1: M37471M2142S
  - IC2: HD74LS07P
  - IC3: D74HC04C
- TRANSISTORS
  - Q1~6: 2SA830SB
  - Q7~11, 13: 2SC1815GR
  - Q12: 2SA1015-GR
- DIODES
  - D1~65, 184~188: MA165
  - D68, 70, 71, 73, 74, 76, 77, 79, 83, 85, 86, 88, 92, 94, 95, 97, 98, 100, 101, 103, 104, 106, 107, 109, 110, 112, 113, 115, 116, 118, 122, 124, 125, 127, 131, 133, 134, 136, 137, 139, 140, 142, 143, 145, 146, 148, 149, 151: SEL6210S
  - D80, 82, 89, 91, 119, 121, 128, 130: SEL6410E
  - D152~156, 158~162, 164~168, 170, 172~178, 181, 182: SEL4117RM
  - D157, 163, 169, 171, 180: SEL4417GM

CPR VR CONTROL PANEL RIGHT, MAIN VOLUME CIRCUIT DIAGRAM

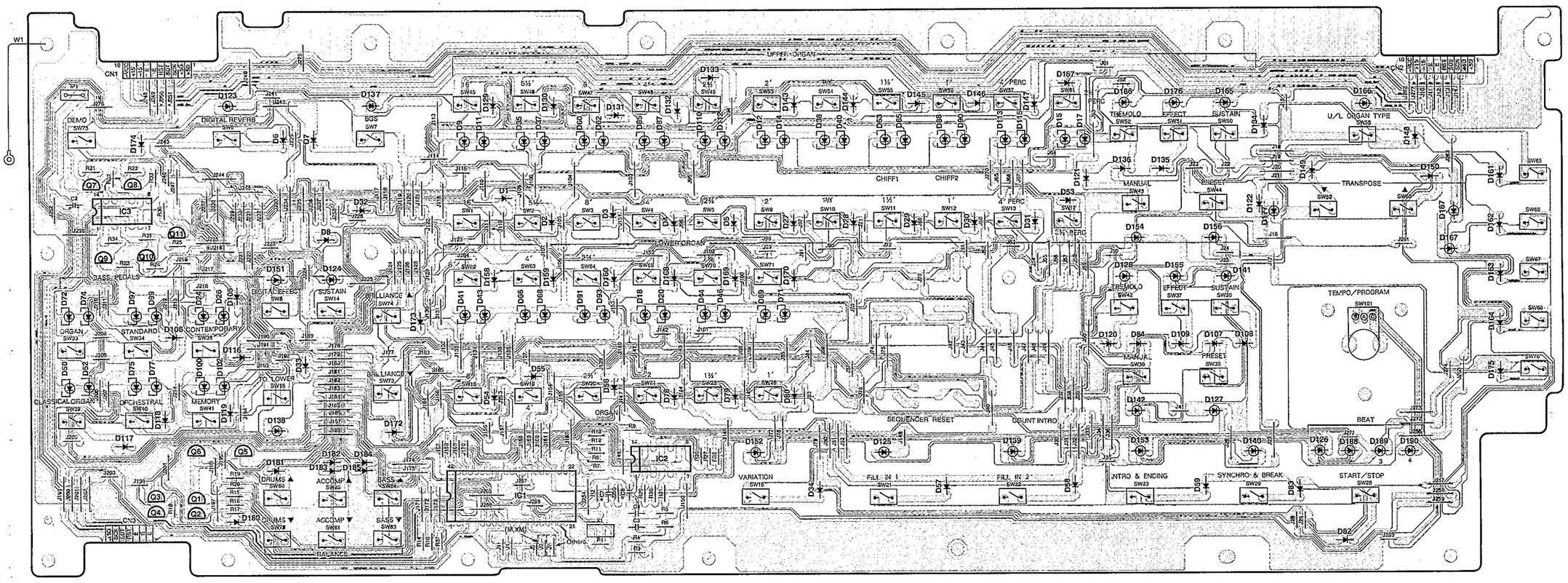


CPL CONTROL PANEL LEFT CIRCUIT BOARD

CPL

• Others **SXPG218511A**

• [M, XM] **SXPG218541A**

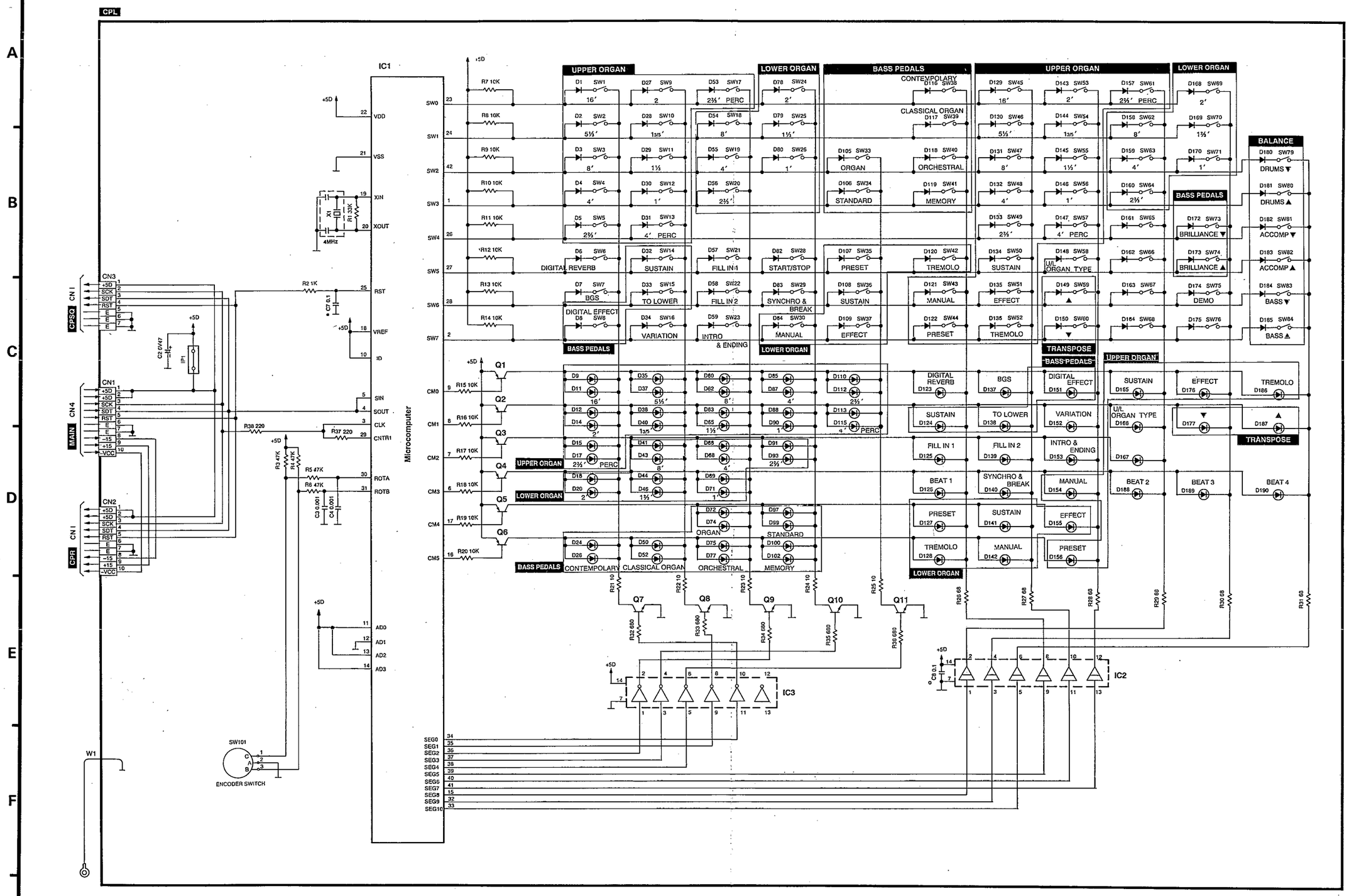


CPL

NOTES:

- IC'S
  - IC1: M37471M2196S
  - IC2: HD74LS07P
  - IC3: D74HC04C
- TRANSISTORS
  - Q1~6: 2SA830SB
  - Q7~11: 2SC1815GR
- DIODES
  - D1~8, 27~34, 53~59, 78~80, 82~84, 105~109, 116~122, 129~136, 143~150, 157~164, 168~170, 172~175, 180~185: MA165
  - D9, 11, 12, 14, 15, 17, 18, 20, 35, 37, 38, 40, 41, 43, 44, 46, 60, 62, 63, 65, 66, 68, 69, 71, 85, 87, 88, 90, 91, 93, 100, 102, 110, 112, 113, 115: SEL6410E
  - D24, 26, 50, 52, 72, 74, 75, 77, 97, 99: SEL6210S
  - D123~126, 128, 137~141, 151~153, 155, 165, 176, 177, 186, 187: SEL4117RM
  - D127, 142, 154, 156, 166, 167, 188~190: SEL4117GM

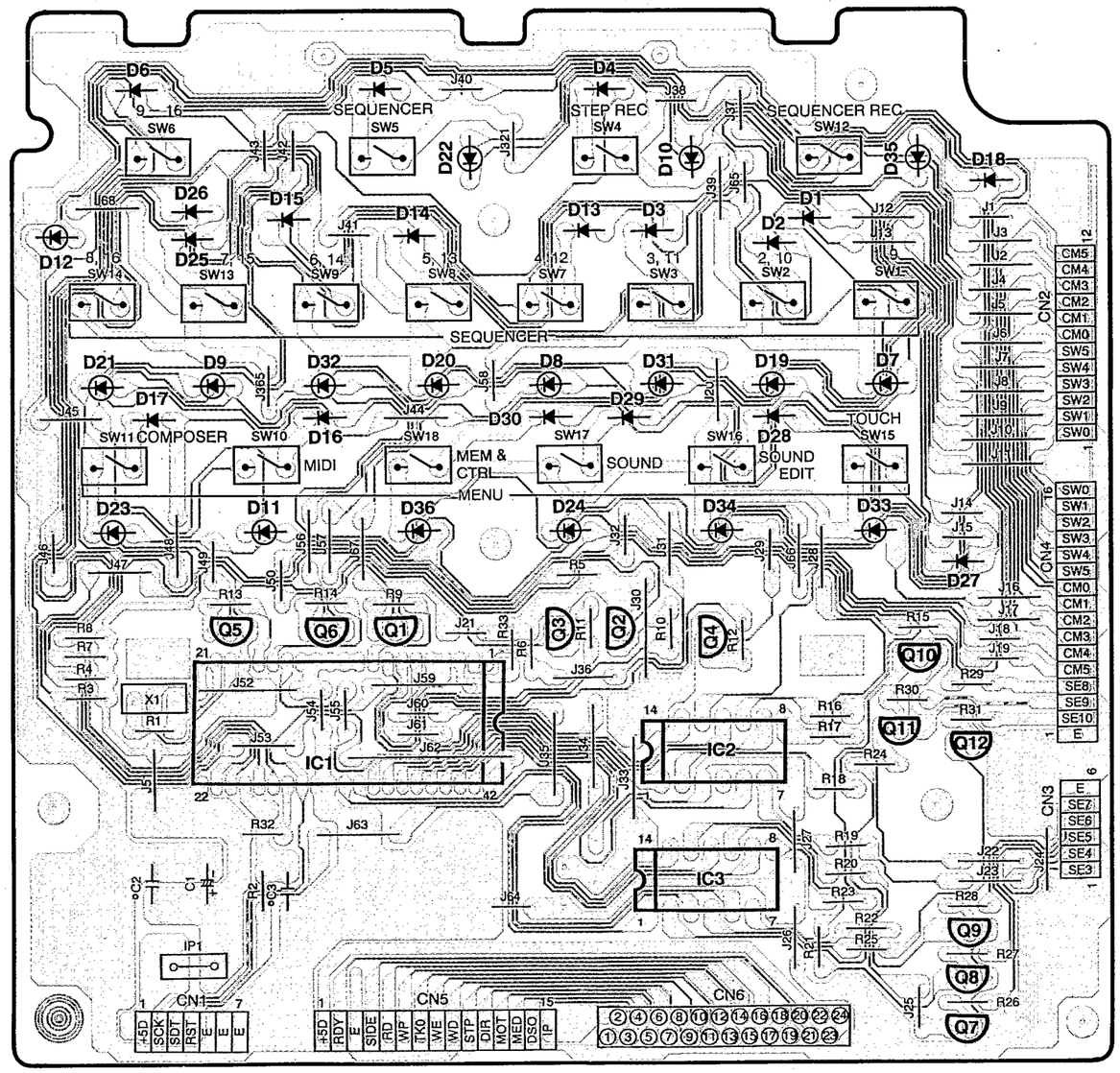
CPL CONTROL PANEL LEFT CIRCUIT DIAGRAM



CPSQ SEQUENCER CONTROL CIRCUIT BOARD

CPSQ

SXPG218711A



CPSQ

NOTES:

- IC'S
  - IC1: M37471M2142S
  - IC2: HD74LS07P
  - IC3: D74HC04C
- TRANSISTORS
  - Q1~6: 2SA830SB
  - Q7~12: 2SC1815GR
- DIODES
  - D1~6, 13~18, 25~30: MA165
  - D7~12, 19~24, 31~36: SEL4417G

CPSQ SEQUENCER CONTROL CIRCIT DIAGRAM

CPSQ

IC1 Microcomputer

SEQUENCER

MENU

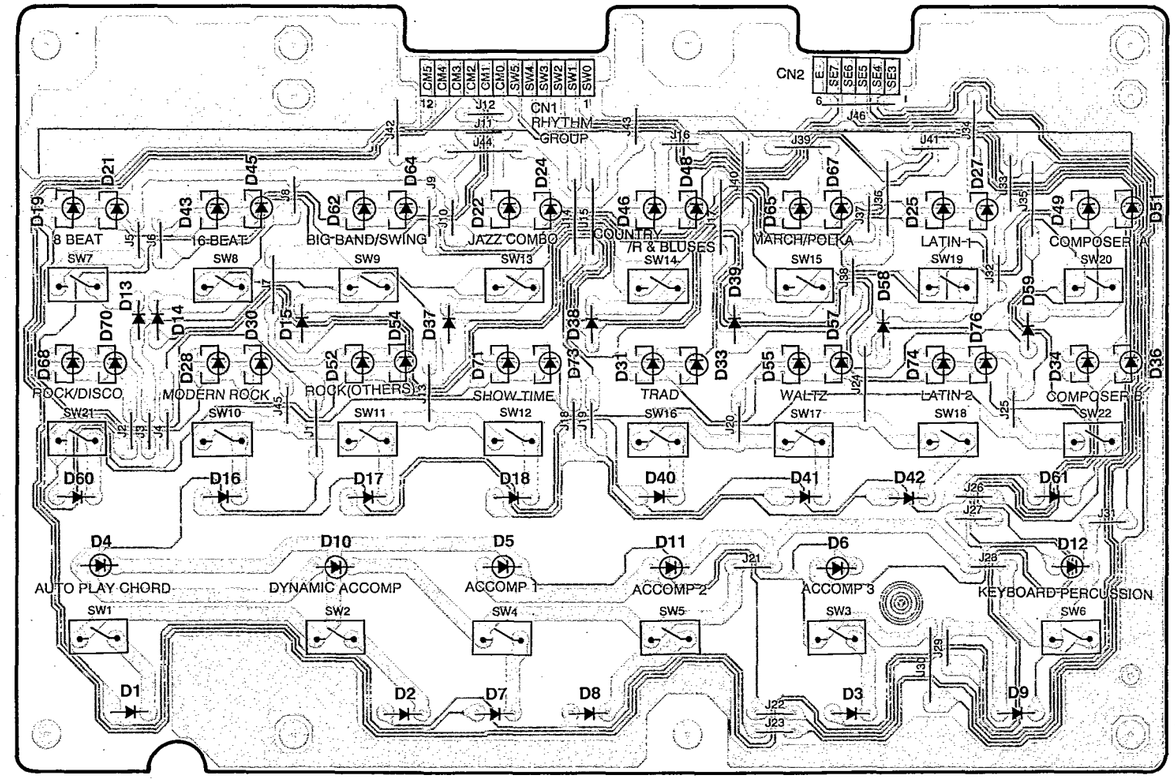
CN1 CN2 CN3 CN4 CN5 CN6 CN8

CPSL CN1 CPSL CN2 CPSL CN3 VSC1 CN1 MAIN CN8 DDR

IC2 IC3

CPSL

SXPG218711B



CPSL

NOTES:

- DIODES
  - D1～3, 7～9, 13～18, 37～42, 58～61: MA165
  - D4: SEL4417GM
  - D5, 6, 10～12: SEL4117RM
  - D19, 21, 22, 24, 25, 27, 28, 30, 31, 33, 43, 45, 46, 48, 52, 54, 55, 57, 62, 64, 65, 67, 68, 70, 71, 73, 74, 76: SEL6210S
  - D34, 36, 49, 51: SEL6410E

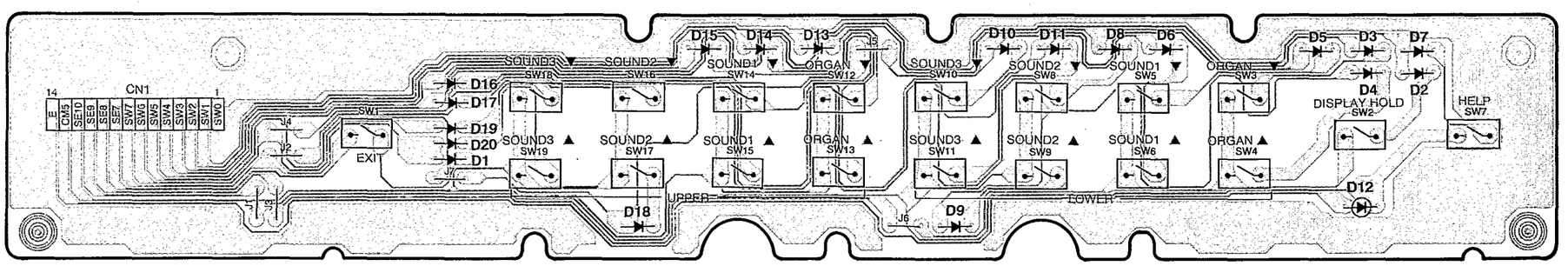
CPC

NOTES:

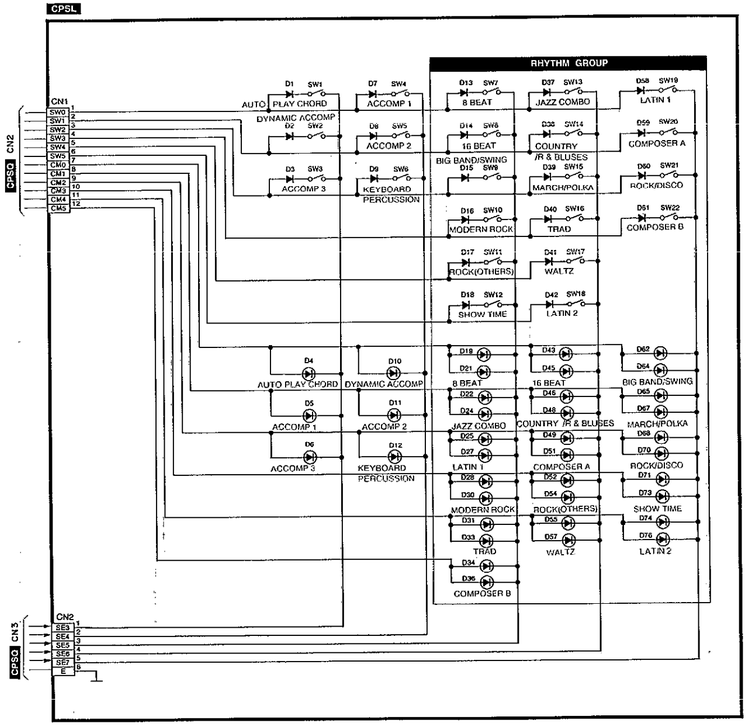
- DIODES
  - D1～11, 13～20: MA165
  - D12: SEL4117RM

CPC

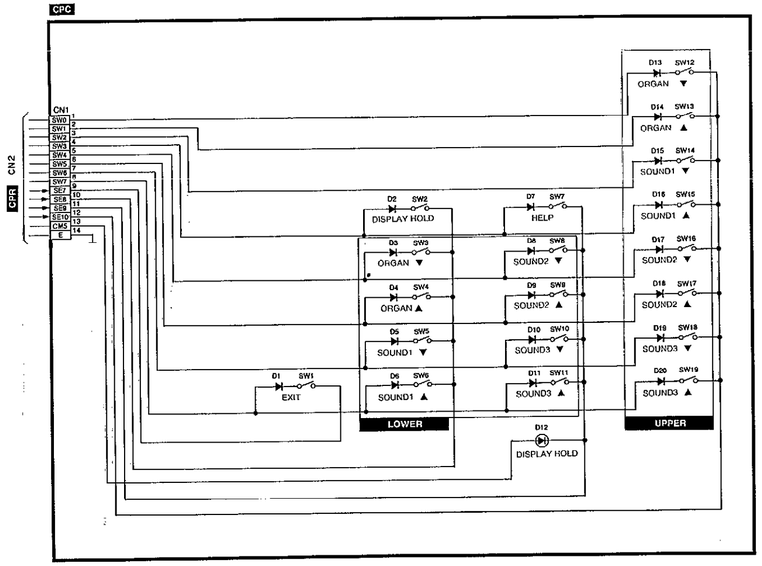
SXPG218711C



CPSL

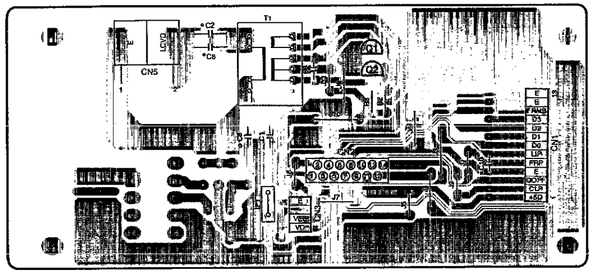


CPC



INV

SXPG218811C



INV

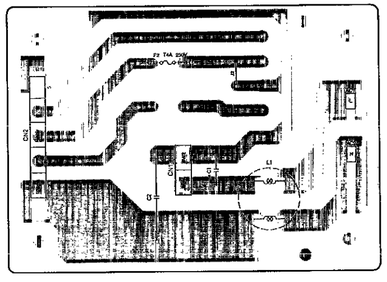
NOTES:

- TRANSISTORS
  Q1, 2: 2SC3940ARS

ACP AS JACK NW AC POWER SUPPLY, AMP & POWER SUPPLY, JACK, NETWORK CIRCUIT BOARD

ACP

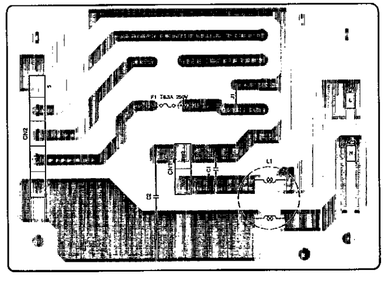
- Others **SXPG218811D**
- [EK] **SXPG218851D**
- [XL] **SXPG218871D**



ACP

NOTES:
- FUSE
  F2: XBA2C40TBO

ACP • [M, MC, XM] **SXPG218841D**

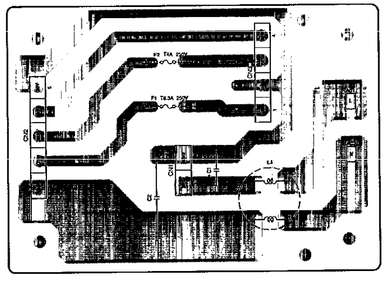


ACP

NOTES:
- FUSE
  F1: XBA2C40TBO

ACP

- [X, XS, XT] **SXPG218861D**
- [XR] **SXPG218881D**
- [XD] ~~SXPG218891D~~

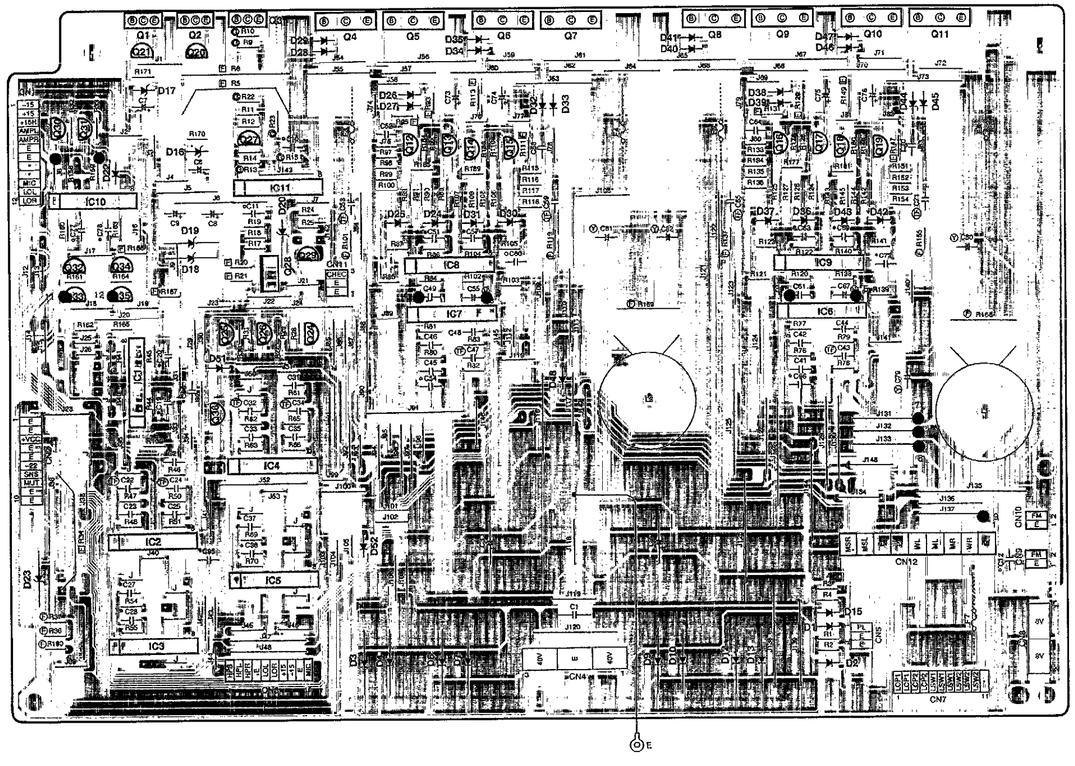


ACP

NOTES:
- FUSES
  F1: XBA2C63TBO
  F2: XBA2C40TBO

AS

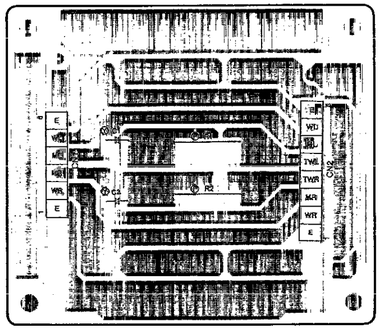
- Others **SXPG218411**
- [M, MC, XM] **SXPG218441**



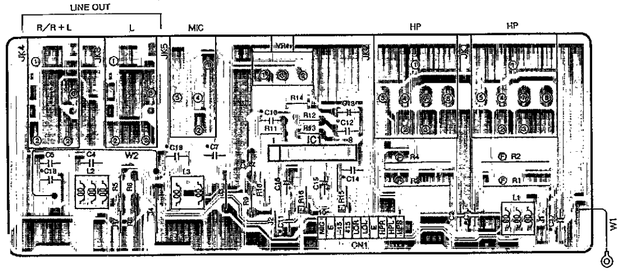
AS

NOTES:
- IC'S
  IC1~11: SVIGM5218L
- TRANSISTORS
  Q1: 2SB1548A-P
  Q2, 3, 28: 2SD2374A-P
  Q4, 6, 8, 10: 2SC5100P
  Q5, 7, 9, 11: 2SA1908P
  Q12, 14, 16, 18, 33, 35: 2SA1534AR
  Q13, 15, 17, 19, 32, 34: 2SC3940ARS
  Q20, 25, 29, 31: 2SC1815GR
  Q21, 24, 26, 27, 30, 36: 2SA1015-GR
- DIODES
  D1, 2, 15: SVDGERA1502
  D3, 4, 6, 7, 9, 10, 12, 13: SVDS3V20
  D16, 17: MA4160
  D18, 19: MA2180LF
  D20: MA4082
  D22, 48: EK04
  D23: MA2220ALF
  D24, 25, 30, 31, 36, 37, 42, 43, 51, 52: MA165
  D26~29, 32~35, 38~41, 44~47: MA185
- FUSES
  F3~7 others: XBA2C25TB0
  F3~6: XBA1C31NU100
  [M, MC, XM]
  F7 [M, MC, XM]: XBA1C25NU100

NW SXPG218811B



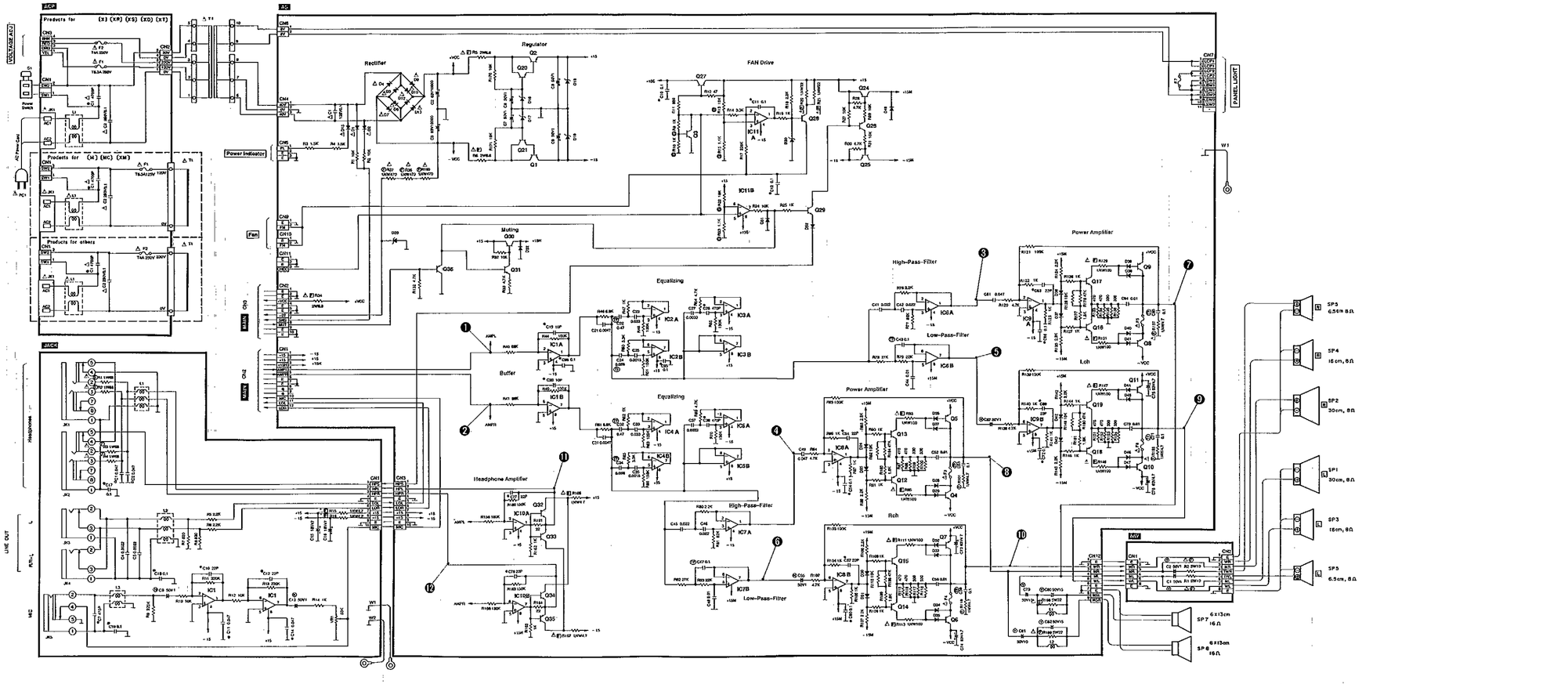
JACK SXPG218811A



JACK

NOTES:
- IC'S
  IC1: SVIGM5218L

AC POWER SUPPLY, AMP & POWER SUPPLY, JACK, NETWORK CIRCUIT DIAGRAM



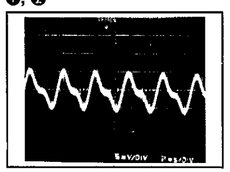
■ Waveform measurement

1. Activate the initial setting method. (Refer to page I-7)
2. Set the E. organ to reference required mode as followings.
   - LOWER ORCHESTRAL CONDUCTOR..... TAB & ORGAN
   - LOWER TAB & ORGAN..... FLUTE 8′ : ON
     FLUTE 4′ : ON
   - TREMOLO..... OFF
   - DIGITAL REVERB..... ALL OFF
3. Key..... C3

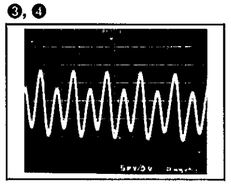
■ 波形の測定条件

1. イニシャルセッテングを行ってください。(I-7 ページ 参照)
2. 次のようにセッティングしてください。
   - LOWER ORCHESTRAL CONDUCTOR ... TAB & ORGAN
   - LOWER TAB & ORGAN ..... FLUTE 8′ : ON
     FLUTE 4′ : ON
   - TREMOLO..... OFF
   - DIGITAL REVERB..... ALL OFF
3. Key C3

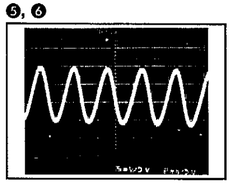
❶, ❷



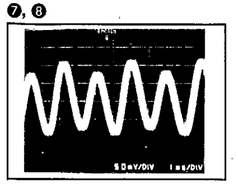
❸, ❹



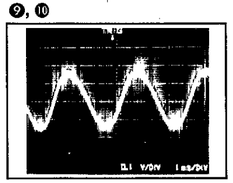
❺, ❻



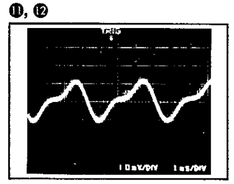
❼, ❽



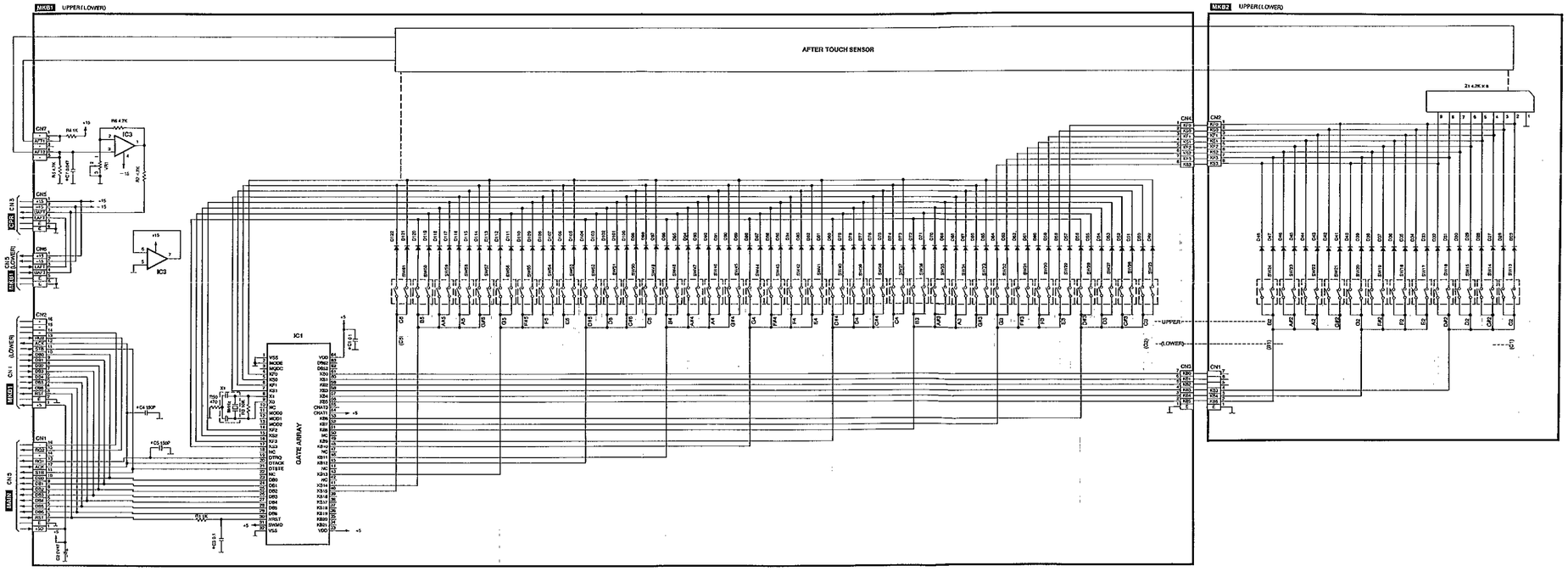
❾, ❿



⓫, ⓬

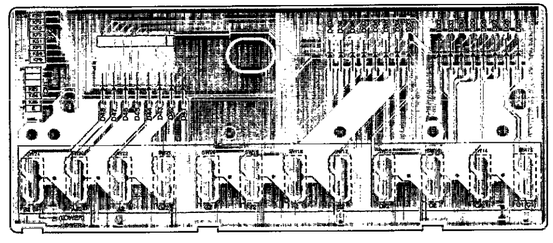


MKB1 MKB2 MANUAL KEYBOARD 1, 2 CIRCUIT DIAGRAM & CIRCUIT BOARD



MKB2

SXPG218111



MKB1

NOTES:

- IC'S
  - IC1: D65022CW-285
  - IC3: SVIGM5218L
- DIODES
  - D49~122: MA165

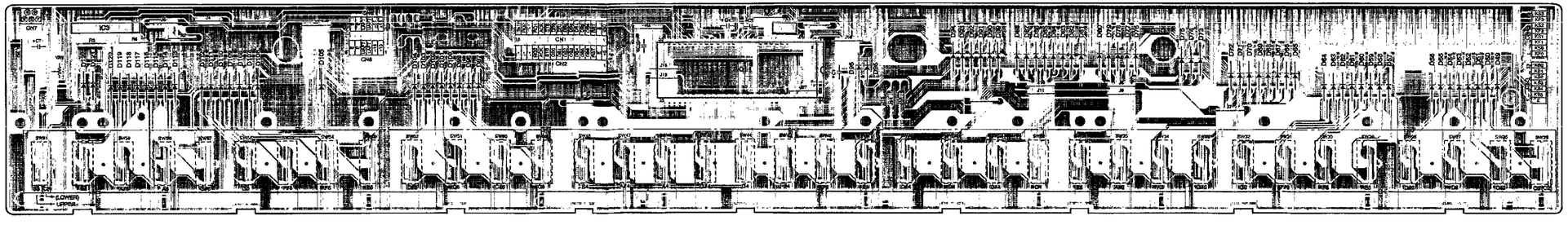
MKB2

NOTES:

- DIODES
  - D25~48: MA165

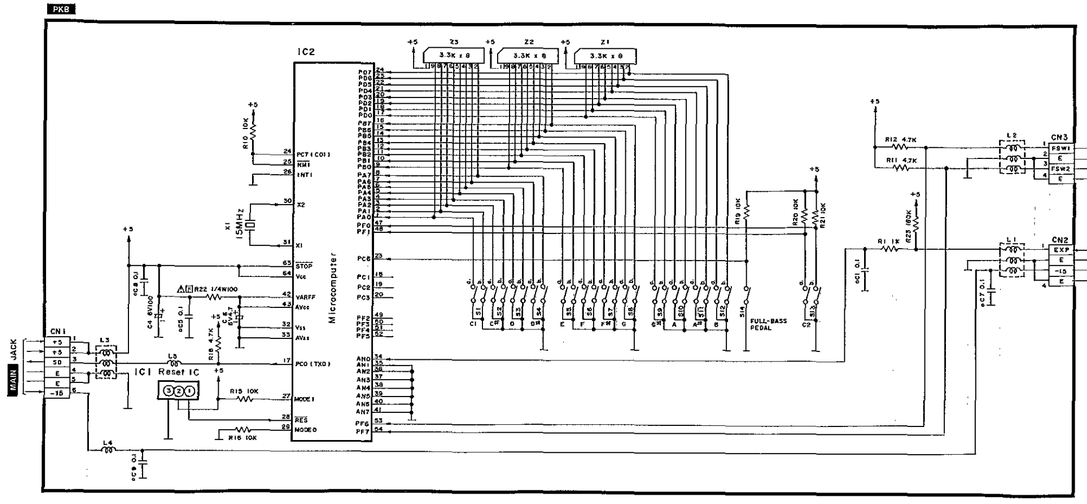
MKB1

SXPG216121

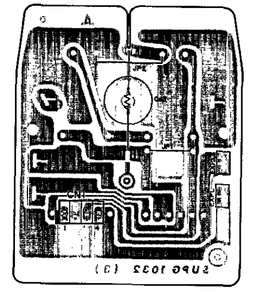


PKB EXP PEDAL KEYBOARD AND EXPRESSION CIRCUIT DIAGRAM

EXP EXPRESSION CIRCUIT BOARD



EXP SXPG103211

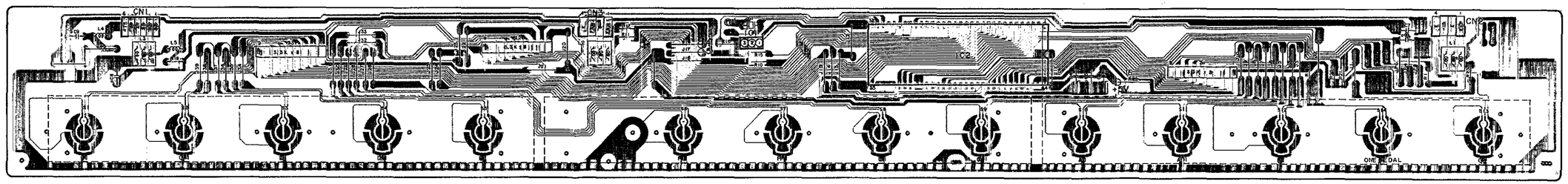


PKB

NOTES:

- IC'S
  - IC1: MN1280R
  - IC2: D78C11ACWF26

PKB SXPG201241



REPLACEMENT PARTS LIST.....P.C.B. and Wiring Parts

Notes:

1. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retension period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention.
   After the end of this period, the assembly will no longer be available.
2. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. The "S" mark is service standard parts and may differ from production parts.
4. ○ mark are new parts.
5. For part No. with area mark, check the area when placing an order.

■ PRINTED CIRCUIT BOARD

	RTL	Area	Part No.	Description	P/S
○	RTL		SXPG218311	MAIN	1
○	RTL		SXPG218611A	CPR	1
○	RTL		SXPG218711D	VR	1
○	RTL	OTHERS	SXPG218511A	CPL	1
○	RTL	[A] [X]	SXPG218541A	CPL	1
○	RTL		SXPG218511B	VSC1	1
○	RTL		SXPG218611B	VSC2	1
○	RTL		SXPG218711A	CPSQ	1
○	RTL		SXPG218711B	CPSL	1
○	RTL		SXPG218711C	CPC	1
○	RTL		SXPG218811C	INV	1
○	RTL	OTHERS	SXPG218411	AS	1
○	RTL	[A] [E] [X]	SXPG218441	AS	1
○	RTL	OTHERS	SXPG218811D	ACP	1
○	RTL	[A] [E] [X]	SXPG218841D	ACP	1
○	RTL	[E]	SXPG218851D	ACP	1
○	RTL	[X] [K] [P]	SXPG218861D	ACP	1
○	RTL	[K]	SXPG218871D	ACP	1
○	RTL	[K]	SXPG218881D	ACP	1
○	RTL	[P]	SXPG218891D	ACP	1
○	RTL		SXPG218811A	JACK	1
○	RTL		SXPG218811B	NW	1
○	RTL		SXPG216121	MKB1	2
○	RTL		SXPG218111	MKB2	2
○	RTL		SXPG201241	PKB	1
	RTL		SXPG103211	EXP	1
○	RTL		QSLG014AA	LCD	1

MAIN MAIN CIRCUIT

Ref. No.	Part No.	Description	P/S
INTEGRATED CIRCUITS			
○ IC1	D70236GD165B	Microcomputer	1
IC2	D65046GD188	Gate Array	1
IC3~6	TC25540AF006	Tone Generator LSI	4
○ IC7~10	D6383GF-3B9	Digital Signal Processor	4
IC11~14	M5M411664J6S	1M bit D-RAM	4
○ IC15	QSIGCGA3AX	4M bit programmed EP ROM	1
○ IC16	QSIGCGA3BX	4M bit programmed EP ROM	1
○ IC17	QSIGCGA3CX	4M bit programmed EP ROM	1
○ IC18	QSIG03C06035	8M bit programmed ROM	1
○ IC20	M5M44170AJ8S	4M bit Dinamic RAM	1
IC22	M5256BFP85LL	256K bit STATIC RAM	1
○ IC23, 26	QSIGT3C16016	16M bit WAVE ROM	2
○ IC24, 27	QSIGT3C16017	16M bit WAVE ROM	2
○ IC25, 28	QSIGT3C16018	16M bit WAVE ROM	2
○ IC29	QSIGT3C16019	16M bit WAVE ROM	1
○ IC31	QSIGT3C16020	16M bit WAVE ROM	1
○ IC33	M66230FP	Interface	1
IC34	D74HC244GS	3 State Buffers	1
IC35	SED1330FBA	LCD Controller	1
IC36	HM65256BLF10	256K bit Pseudo Static RAM	1
IC37	D72068GF-3B9	Floppy Disk Controller	1
IC38	SVIGTLP513	Photo Coupler	1
○ IC39~42	PCM69AU	D-A Converter	4
IC44, 48	D74HC74GS	D-type Flip flops	2
IC45~47, 50~52	D74HC164GS	Shift Resister	6
○ IC49	D74HC393GS	DUAL 4 bit Binary Counter	1
IC53~67, 90~93	M5218AFP	Operational Amplifier	9
○ IC59	D74HC08GS	QUAD 2 Input AND GATE	1
○ IC60	D74HC32GS	QUAD 2 Input OR GATE	1
○ IC61	D74HC86GS	QUAD 2 Input Exclusive OR GATE	1
IC62	D74HC04GS	6 Inveter	1
○ IC63	D74HCU04GS	Hex Inverter	1
○ IC80	AM29F010	Flash Memory	1
IC82	BA10393F	Comparator	1
TRANSISTORS			
Q1, 9~11	2SB709ARTW	Transistor	4
Q2	2SD601AQTW	Transistor	1
S Q3, 4, 6, 8	2SC1815GR	Transistor	4
Q5	2SB946P	Transistor	1
DIODES			
D1~5, 9, 11~13, 15~19	MA165	Diode	14
D6	MA2062LF	Zener, 6.2V	1
D7	SVDGERC9102	Diode	1
D8	MA1030	Zener, 3.0V	1
D10	MA4051	Zener, 5.1V	1
D14	MA4056	Zener, 5.6V	1
OSCILLATORS			
X1, 3	QSXG1I3200A	32MHz, Quartz Oscillator	2
X2	QSXG1I4915A	49MHz, Quartz Oscillator	1
X4	EF0EC8004A5	8MHz, Ceramic Oscillator	1
COMPONENT COMBINATIONS			
○ Z1	EXBV8V470J	47Ω×4	1
Z2~5, 19	EXBV8V101J	100Ω×4	5
○ Z6~9	EXBV8V151J	150Ω×4	4
Z10, 11, 18	EXBV8V471J	470Ω×4	3
Z12~14, 20~22	EXBS8V471J	470Ω×4	6
Z23, 24, 28	EXBV8V472J	4.7kΩ×4	3
Z25, 26, 33	EXBS8V102J	1kΩ×4	3
Z29~31	EXBS8V470J	47Ω×4	3
Z32, 34, 40, 41	EXBV8V102J	1kΩ×4	4
Z42	EXBS8V101J	100Ω×4	1
COILS			
L1	SLCG3A121T	Coil	1
L2~8	QLQGT3T150SA	Coil	7
L12	QLQGT1B800MA	Coil	1

Ref. No.	Part No.	Description	P/S
JACKS			
○ JK1	QJJG004AA	MIDI, IN, OUT, THUR	1
JK4	QJSG002AA	PEDAL IN	1
JK5, 6	QJJG003AA	BASS, ORG	2
JK7~10	QJJG003AA	AUX, DP	4
WIRES			
W1, 2	QEXGRA01005A	Wire	2
RESISTORS			
R1	ERJ6GEYJ103V	10kΩ	1
R4	ERJ6GEYJ222V	2.2kΩ	1
R5, 6	ERJ6GEYJ102V	1kΩ	2
R7	ERJ6GEYJ104V	100kΩ	1
R8	ERJ6GEYJ102V	1kΩ	1
R9	ERJ6GEYJ154V	150kΩ	1
R10	ERJ6GEYJ472V	4.7kΩ	1
R11~13	ERJ6GEYJ101V	100Ω	3
R14	ERJ6GEYJ472V	4.7kΩ	1
R15	ERJ6GEYJ222V	2.2kΩ	1
R16	ERJ6GEYJ472V	4.7kΩ	1
R17	ERJ6GEYJ221V	220Ω	1
R18	ERJ6GEYJ101V	100Ω	1
R19	ERJ6GEYJ472V	4.7kΩ	1
R20	ERJ6GEYJ221V	220Ω	1
R24, 25	ERJ6GEYJ101V	100Ω	2
R26	ERJ6GEYJ103V	10kΩ	1
R27	ERJ6GEYJ472V	4.7kΩ	1
R28, 29	ERJ6GEYJ103V	10kΩ	2
R32	ERJ6GEYJ333V	33kΩ	1
R33~35	ERJ6GEYJ472V	4.7kΩ	3
R36, 37, 40	ERJ6GEYJ101V	100Ω	3
R41	ERJ6GEYJ331V	330Ω	1
R42, 43	ERJ6GEY0R00V	0Ω	2
R50, 51, 55, 57	ERJ6GEY0R00V	0Ω	4
R60	ERJ6GEYJ102V	1kΩ	1
R66	ERJ6GEYJ473V	47kΩ	1
R67	ERJ6GEYJ222V	2.2kΩ	1
R70~74	ERJ6GEYJ472V	4.7kΩ	5
R76	ERJ6GEYJ221V	220Ω	1
○ R78	ERJ6GEYJ470V	47Ω	1
R80	ERJ6GEYJ221V	220Ω	1
R81	ERJ6GEYJ103V	10kΩ	1
R82	ERJ6GEYJ330V	33Ω	1
R83	ERJ6GEYJ151V	150Ω	1
R84	ERJ6GEYJ103V	10kΩ	1
R85	ERJ6GEYJ100V	10Ω	1
R86, 87	ERJ6GEYJ680V	68Ω	2
○ R90, 91	ERJ6GEYJ470V	47Ω	2
R92	ERJ6GEYJ222V	2.2kΩ	1
○ R93, 94	ERJ6GEYJ470V	47Ω	2
R95, 96	ERJ6GEYJ331V	330Ω	2
R99	ERJ6GEYJ222V	2.2kΩ	1
R101	ERJ6GEYJ221V	220Ω	1
R102	ERJ6GEYJ471V	470Ω	1
R103	ERJ6GEYJ472V	4.7kΩ	1
R104	ERJ6GEYJ222V	2.2kΩ	1
R105	ERJ6GEYJ682V	6.8kΩ	1
R106	ERJ6GEYJ103V	10kΩ	1
R120	ERJ6GEYJ102V	1kΩ	1
R121	ERJ6GEYJ683V	68kΩ	1
○ R122	ERJ6GEYJ273V	27kΩ	1
○ R123	ERJ6GEYJ822V	8.2kΩ	1
R124	ERJ6GEYJ683V	68kΩ	1
○ R125	ERJ6GEYJ273V	27kΩ	1
○ R126	ERJ6GEYJ822V	8.2kΩ	1
R127, 128	ERJ6GEYJ222V	2.2kΩ	2

Ref. No.	Part No.	Description	P/S
○ R129, 130	ERJ6GEYJ821V	820Ω	2
R131, 132	ERJ6GEYJ222V	2.2kΩ	2
R133	ERJ6GEYJ683V	68kΩ	1
R140	ERJ6GEYJ102V	1kΩ	1
○ R142, 144	ERJ6GEYJ822V	8.2kΩ	2
R145	ERJ6GEYJ683V	68kΩ	1
R146	ERJ6GEYJ333V	33kΩ	1
○ R147	ERJ6GEYJ273V	27kΩ	1
R148	ERJ6GEYJ683V	68kΩ	1
R149	ERJ6GEYJ333V	33kΩ	1
○ R150	ERJ6GEYJ273V	27kΩ	1
R151, 152	ERJ6GEYJ153V	15kΩ	2
R153, 154	ERJ6GEYJ683V	68kΩ	2
R155, 156	ERJ6GEYJ222V	2.2kΩ	2
R157, 158	ERJ6GEY0R00V	0Ω	2
R160	ERJ6GEYJ102V	1kΩ	1
R161	ERJ6GEYJ473V	47kΩ	1
R162	ERJ6GEYJ103V	10kΩ	1
R163	ERJ6GEYJ473V	47kΩ	1
R164	ERJ6GEYJ103V	10kΩ	1
R165, 166	ERJ6GEYJ223V	22kΩ	2
○ R167, 168	ERJ6GEYJ822V	8.2kΩ	2
○ R169	ERJ6GEYJ273V	27kΩ	1
R170	ERJ6GEYJ333V	33kΩ	1
R171	ERJ6GEYJ683V	68kΩ	1
○ R172	ERJ6GEYJ273V	27kΩ	1
R173	ERJ6GEYJ333V	33kΩ	1
R174	ERJ6GEYJ683V	68kΩ	1
R175, 176	ERJ6GEYJ222V	2.2kΩ	2
R177, 178	ERJ6GEYJ683V	68kΩ	2
R180	ERJ6GEYJ102V	1kΩ	1
○ R183	ERJ6GEYJ273V	27kΩ	1
○ R184	ERJ6GEYJ822V	8.2kΩ	1
○ R185	ERJ6GEYJ273V	27kΩ	1
○ R186	ERJ6GEYJ822V	8.2kΩ	1
R187, 188	ERJ6GEYJ222V	2.2kΩ	2
○ R189, 190	ERJ6GEYJ821V	820Ω	2
R191, 192	ERJ6GEYJ222V	2.2kΩ	2
R193~196	ERJ6GEYJ683V	68kΩ	4
R220, 221	ERJ6GEYJ102V	1kΩ	2
R222	ERJ6GEYJ101V	100Ω	1
R223	ERJ6GEYJ333V	33kΩ	1
R224	ERJ6GEYJ471V	470Ω	1
R300, 301	ERJ6GEYJ103V	10kΩ	2
R302, 303	ERJ6GEYJ682V	6.8kΩ	2
R470	ERJ6GEY0R00V	0Ω	1
R560~567	ERJ6GEYJ682V	6.8kΩ	8
R591	ERJ6GEYJ103V	10kΩ	1
R592	ERJ6GEYJ104V	100kΩ	1
CAPACITORS			
C8, 9	ECUV1H104ZFX	0.1μF	2
C12~16	ECUV1H104ZFX	0.1μF	5
C18~21, 23, 25	ECUV1H104ZFX	0.1μF	6
C26	ECUV1H101JG	100pF	1
C27	ECUV1H104ZFX	0.1μF	1
C34~39	ECUV1H104ZFX	0.1μF	6
C41, 44, 49	ECUV1H104ZFX	0.1μF	3
C51, 53, 56, 58, 59	ECUV1H104ZFX	0.1μF	5
C61, 66, 68	ECUV1H104ZFX	0.1μF	3
C70, 73	ECUV1H104ZFX	0.1μF	2
C80, 84, 86	ECUV1H104ZFX	0.1μF	3
C90~92, 95, 96	ECUV1H104ZFX	0.1μF	5
C97	ECUV1H101JG	100pF	1
C101, 102	ECUV1H104ZFX	0.1μF	2
C103, 104	ECUV1H221JG	220pF	2
C105	ECUV1H104ZFX	0.1μF	1

CPR CONTROL PANEL RIGHT CIRCUIT

Ref. No.	Part No.	Description	P/S
C113	EECS5R5V105	1F, 5.5V, Memory Back-up	1
C115~120	ECUV1H104ZFX	0.1μF	6
C121	ECEA0JKA470	47μF, 6.3V	1
C122	ECEA1CKA100	10μF, 16V	1
C123	ECEA0JKA470	47μF, 6.3V	1
C124	ECUV1H104ZFX	0.1μF	1
C126	ECUV1H222KX	0.0022μF	1
○ C127, 129	ECUV1H681JG	680pF	2
C130	ECUV1H104ZFX	0.1μF	1
C131, 132	ECEA1HKA010	1μF, 50V	2
C133, 134	ECUV1H471JG	470pF	2
C135~138	ECUV1H104ZFX	0.1μF	4
C140	ECEA0JKA470	47μF, 6.3V	1
C141	ECEA1CKA100	10μF, 16V	1
C142	ECEA0JKA470	47μF, 6.3V	1
C143~147	ECUV1H104ZFX	0.1μF	5
○ C148, 149	ECUV1H681JG	680pF	2
C150	ECEA1HKN010	1μF, 50V	1
C151, 152	ECEA1HKA010	1μF, 50V	2
C153, 154	ECUV1H222KX	0.0022μF	2
C155, 156	ECUV1H104ZFX	0.1μF	2
C160	ECEA1HKN010	1μF, 50V	1
C161, 162	ECUV1H471JG	470pF	2
C163	ECUV1H104ZFX	0.1μF	1
C170	ECEA0JKA470	47μF, 6.3V	1
C171	ECEA1CKA100	10μF, 16V	1
C172	ECUV1H104ZFX	0.1μF	1
○ C173	ECUV1H681JG	680pF	1
C174	ECUV1H101JG	100pF	1
○ C175	ECUV1H681JG	680pF	1
C176	ECUV1H101JG	100pF	1
C177, 182	ECUV1H104ZFX	0.1μF	2
C183, 184	ECEA1HKA010	1μF, 50V	2
C185, 186	ECUV1H222KX	0.0022μF	2
C187~189	ECUV1H104ZFX	0.1μF	3
C190	ECEA0JKA470	47μF, 6.3V	1
C191	ECEA1CKA100	10μF, 16V	1
C192, 193	ECUV1H104ZFX	0.1μF	2
C194	ECQB1H223JZ	0.022μF	1
C195	ECUV1H222KX	0.0022μF	1
○ C196	ECUV1H681JG	680pF	1
C197	ECQB1H223JZ	0.022μF	1
C198	ECUV1H222KX	0.0022μF	1
○ C199	ECUV1H681JG	680pF	1
C200	ECUV1H104ZFX	0.1μF	1
C201, 202	ECEA1HKA010	1μF, 50V	2
C203, 204	ECUV1H471JG	470pF	2
C205, 206, 212, 213	ECUV1H104ZFX	0.1μF	4
C220, 221, 230	ECUV1H104ZFX	0.1μF	3
C232	ECUV1H030CCN	3pF	1
C250	EECS5R5V105	1F, 5.5V, Memory Back-up	1
C351, 352	ECUV1H471JG	470pF	2
C353, 356, 370, 371	ECUV1H104ZFX	0.1μF	4
C372~375	ECEA1CKN100	10μF, 16V	4
C376, 377	ECUV1H104ZFX	0.1μF	2
C378, 379	ECEA1CKN100	10μF, 16V	2
C551	ECEA0JU102	1000μF, 6.3V	1
○ C553	ECUV1H223KBX	0.022μF	1
C554	ECUV1H104ZFX	0.1μF	1
C555	ECEA1JU470	47μF , 63V	1
○ C556	ECUV1H472KBG	0.0047μF	1
C557	ECEA1CKA100	10μF, 16V	1
C558, 590, 606, 640, 641, 650	ECUV1H104ZFX	0.1μF	6
C701	ECCF1H101J	100pF	1

Ref. No.	Part No.	Description	P/S
INTEGRATED CIRCUITS			
IC1	M37471M2142S	8 bit Microcomputer	1
IC2	HD74LS07P	Hex Buffers	1
○ IC3	D74HC04C	Hex Buffers	1
TRANSISTORS			
Q1~6	2SA830SB	Transistor	6
S Q7~11	2SC1815GR	Transistor	6
S Q12	2SA1015-GR	2SA933STRS (SUB. Part)	1
S Q13	2SC1815GR	Transistor	1
DIODES			
D1~65, 184~188	MA165	Diode	70
○ D66, 70, 71, 73, 74, 76, 77, 79, 83, 85, 86, 88, 92, 94, 95, 97, 98, 100, 101, 103, 104, 106, 107, 109, 110, 112, 113, 115, 116, 118, 122, 124, 125, 127, 131, 133, 134, 136, 137, 139, 140, 142, 143, 145, 146, 148, 149, 151	SEL6210S	LED (RED)	48
○ D80, 82, 89, 91, 119, 121, 128, 130	SEL6410E	LED (GREEN)	8
D152~156, 158~162, 164~168, 170, 172~178, 181, 182	SEL4117RM	LED (RED)	25
D157, 163, 169, 171, 180	SEL4417GM	LED (GREEN)	5
OSCILLATOR			
X1	EF0EC4004A3	4MHz, Ceramic Oscillator	1
SWITCHES			
○ S1~65	EVQ21907K	Push Switch	65
IC PROTECTOR			
IP1 ⚠	ICP-N10T104	IC Protector	1
VARIABLE RESISTOR			
VR2	QRVG20N01B14	10kΩ B, CONTRAST	
RESISTORS			
R1	ERDS2TJ333	33kΩ	1
R2~15	ERDS2TJ103	10kΩ	14
R16~20	ERDS2TJ100	10Ω	5
R21~26	ERDS2TJ680	68Ω	6
R27	ERDS2TJ473	47kΩ	1
○ R28	ERTD2ZHK333	33kΩ	1
R30	ERDS2TJ223	22kΩ	1
R31	ERDS2TJ682	6.8kΩ	1
R32, 33	ERDS2TJ472	4.7kΩ	2
R34	ERDS2TJ224	220kΩ	1
R35	ERDS2TJ222	2.2kΩ	1
R36	ERDS2TJ101	100Ω	1
R37	ERDS2TJ222	2.2kΩ	1
R38	ERDS2TJ332	3.3kΩ	1
R39, 40	ERDS2TJ102	1kΩ	2
R41~45	ERDS2TJ681	680Ω	5
R46	ERDS2TJ221	220Ω	1

Ref. No.	Part No.	Description	P/S
CAPACITORS			
C2	ECEA1HKA010	1µF, 50V	1
C3	ECEA0JKA470	47µF, 6.3V	1
C4	ECRF1H104ZF	0.1µF	1
C5	ECEA0JKA470	47µF, 6.3V	1
C6, 7	ECRF1H104ZF	0.1µF	2
C9	ECRF1H104ZF	0.1µF	1

VR MAIN VOLUE CIRCUIT

Ref. No.	Part No.	Description	P/S
VARIABLE RESISTOR			
VR1	EVD06510B24G	20kΩ B, MAIN VOLUME	1

CPL CONTROL PANEL LEFT CIRCUIT

Ref. No.	Part No.	Description	P/S
INTEGRATED CIRCUITS			
IC1	M37471M2196S	16 bit Microcomputer	1
IC2	HD74LS07P	Hex Buffers	1
○ IC3	D74HC04C	Hex Buffers	1
TRANSISTORS			
Q1~6	2SA830SB	Transistor	6
S Q7~11	2SC1815GR	Transistor	4
DIODES			
D1~8, 27~34, 53~59, 78~80, 82~84, 105~109, 116~122, 129~136, 143~150, 157~164, 168~170, 172~175, 180~185	MA165	Diode	78
○ D9, 11, 12, 14, 15, 17, 18, 20, 35, 37, 38, 40, 41, 43, 44, 46, 60, 62, 63, 65, 66, 68, 69, 71, 85, 87, 88, 90, 91, 93, 100, 102, 110, 112, 113, 115	SEL6410E	LED (GREEN)	36
○ D24, 26, 50, 52, 72, 74, 75, 77, 97, 99	SEL6210S	LED (RED)	10
D123~126, 128, 137~141, 151~153, 155, 165, 176, 177, 186, 187	SEL4117RM	LED (RED)	19
D127, 142, 154, 156, 166, 167, 188~190	SEL4417GM	LED (GREEN)	9
OSCILLATOR			
X1	EF0EC4004A3	4MHz, Ceramic Oscillator	1

Ref. No.	Part No.	Description	P/S
SWITCHES			
○ S1~26, 28~30, 33~71, 73~76, 79~84	EVQ21907K	Push Switch	78
SW101	QSRGT002AA	Encoder Switch	1
IC PROTECTOR			
IP1 ⚠	ICP-N10T104	IC Protector	1
WIRE			
○ W1	QEXGRA01010A	Wire	1
RESISTORS			
R1	ERDS2TJ333	33kΩ	1
R2	ERDS2TJ102	1kΩ	1
R3~6	ERDS2TJ473	47kΩ	4
R7~20	ERDS2TJ103	10kΩ	14
R21~25	ERDS2TJ100	10Ω	5
R26~31	ERDS2TJ680	68Ω	6
R32~36	ERDS2TJ681	680Ω	5
R37, 38	ERDS2TJ221	220Ω	2
CAPACITORS			
C2	ECEA0JKA470	47µF, 6.3V	1
C3, 4	ECBA1H102KB	0.001µF	2
C7, 8	ECRF1H104ZF	0.1µF	2

VSC1 VOICE SETTING COMPUTER 1

Ref. No.	Part No.	Description	P/S
DIODES			
D1~9	MA165	Diode	9
○ D10, 12, 13, 15, 16, 18, 19, 21, 22, 24, 25, 27, 28, 30, 31, 33	SEL6210S	LED (RED)	16
SWITCHES			
○ S1~9	EVQ21907K	Push Switch	9

VSC2 VOICE SETTING COMPUTER 2

Ref. No.	Part No.	Description	P/S
DIODES			
D37~44	MA165	Diode	8
○ D46, 48, 49, 51, 52, 54, 55, 57, 58, 60, 61, 63, 64, 66, 67, 69	SEL6210S	LED (RED)	16
SWITCHES			
○ S10~17	EVQ21907K	Push Switch	8

CPSQ SEQUENCER CONTROL CIRCUIT

	Ref. No.	Part No.	Description	P/S
	INTEGRATED CIRCUITS			
	IC1	M37471M2142S	8bit Microcomputer	1
	IC2	HD74LS07P	Hex Buffers	1
○	IC3	D74HC04C	Hex Buffers	1
	TRANSISTORS			
	Q1~6	2SA830SB	Transistor	6
S	Q7~12	2SC1815GR	Transistor	6
	DIODES			
	D1~6, 13~18, 25~30	MA165	Diode	18
	D7~12, 19~24, 31~36	SEL4417G	LED (Green)	18
	OSCILLATOR			
	X1	EF0EC4004A3	4MHz, Ceramic Oscillator	1
	SWITCHES			
○	S1~18	EVQ21907K	Push Switch	18
	IC PROTECTOR			
	IP1 ⚠	ICP-N10T104	IC Protector	1
	RESISTORS			
	R1	ERDS2TJ333	33kΩ	1
	R2	ERDS2TJ103	10kΩ	1
	R3~14	ERDS2TJ103	10kΩ	12
	R15~19	ERDS2TJ680	68Ω	5
	R20~25	ERDS2TJ681	680Ω	6
	R26~31	ERDS2TJ100	10Ω	6
	R32, 33	ERDS2TJ103	10kΩ	2
	CAPACITORS			
	C1	ECEA0JKA470	47μF, 6.3V	1
	C2, 3	ECRF1H104ZF	0.1μF	2

CPSL LOWER CONTROL PANEL LEFT CIRCUIT

	Ref. No.	Part No.	Description	P/S
	DIODES			
	D1~3, 7~9, 13~18, 37~42, 58~61	MA165	Diode	22
	D4	SEL4417GM	LED (GREEN)	1
	D5, 6, 10~12	SEL4117RM	LED (RED)	5
○	D19, 21, 22, 24, 25, 27, 28, 30, 31, 33, 43, 45, 46, 48, 52, 54, 55, 57, 62, 64, 65, 67, 68, 70, 71, 73, 74, 76	SEL6210S	LED (RED)	28
○	D34, 36, 49, 51	SEL6410E	LED (GREEN)	4
	SWITCHES			
○	S1~22	EVQ21907K	Push Switch	22

CPC UPPER CONTROL PANEL CENTER CIRCUIT

	Ref. No.	Part No.	Description	P/S
	DIODES			
	D1~11, 13~20	MA165	Diode	19
	D12	SEL4117RM	LED (RED)	1
	SWITCHES			
○	S1~19	EVQ21907K	Push Switch	19

INV INVERTER CIRCUIT

	Ref. No.	Part No.	Description	P/S
	TRANSISTORS			
	Q1, 2	2SC3940ARS	Transistor	2
	TRANSFORMER			
○	T1	QTDG003A	Transformer	1
	IC PROTECTOR			
	IP1 ⚠	ICP-N10T104	IC Protector	1
	RESISTORS			
	R2, 3	ERDS2TJ562	5.6kΩ	2
	CAPACITORS			
	C1	ECEA0JKA101	100μF, 6.3V	1
○	C2	ECCD3F180JGE	18pF	1
	C3	ECHS1473JZW	0.047μF	1
	C6	ECRF1H104ZF	0.1μF	1
○	C8	ECCD3F180JGE	18pF	1
	C10	ECCR1H101J	100pF	1

AS AMP & POWER SUPPLY CIRCUIT

	Ref. No.	Part No.	Description	P/S
	INTEGRATED CIRCUITS			
S	IC1~11	SVIGM5218L	Operational Amplifier	11
	TRANSISTORS			
○	Q1	2SB1548A-P	Transistor	1
○	Q2, 3, 28	2SD2374A-P	Transistor	3
○	Q4, 6, 8, 10	2SC5100P	Transistor	4
○	Q5, 7, 9, 11	2SA1908P	Transistor	4
	Q12, 14, 16, 18, 33, 35	2SA1534AR	Transistor	6
	Q13, 15, 17, 19, 32, 34	2SC3940ARS	Transistor	6
S	Q20, 25, 29, 31	2SC1815GR	Transistor	4
S	Q21, 24, 26, 27, 30, 36	2SA1015-GR	2SA933STRS (SUB. Part)	6
	DIODES			
	D1, 2, 15 ⚠	SVDGERA1502	Rectifier	3
	D3, 4, 6, 7, 9, 10, 12, 13 ⚠	SVDS3V20	Rectifier	8
	D16, 17	MA4160	Zener, 16.0V	2
○	D18, 19	MA2180LF	Zener, 18V	2
	D20	MA4082	Zener, 8.2V	1
	D22, 48	EK04	Diode	2
○	D23	MA2220ALF	Zener, 22V	1
	D24, 25, 30, 31, 36, 37, 42, 43, 51, 52	MA165	Diode	10

Ref. No.		Part No.	Description	P/S
○	D26~29, 32~35, 38~41, 44~47	MA185	Diode	16
	COILS & LINE FILTERS			
	L1, 2	QLCGTKR68KA	0.68mH	2
	FUSES			
	F3~7 OTHERS △	XBA2C25TB0	T2.5A, 250V	5
	F3~6 △	XBA1C31NU100	3.15A, 125V, [A] [K] [YA]	6
	F7 △	XBA1C25NU100	2.5A, 125V, [A] [K] [YA]	3
	WIRE			
○	W1	QEXGRA01010D	Wire	1
	RESISTORS			
	R1, 2	ERDS2TJ103	10kΩ	2
	R3, 4	ERDS2TJ152	1.5kΩ	2
○	R5, 6 △	ERQ2CJP6R8S	6.8Ω, 2W, Fuse Type	2
	R9, 10	ER0S2CKF1001	1kΩ, ±1%	2
	R11	ERDS2TJ681	680Ω	1
	R12	ERDS2TJ470	47Ω	1
○	R13	ER0S2CKF1502	15kΩ, ±1%	1
	R14	ERDS2TJ332	3.3kΩ	1
○	R15	ER0S2CKF1101	1.1kΩ, ±1%	1
	R17	ERDS2TJ224	220kΩ	1
	R18	ERDS2TJ222	2.2kΩ	1
	R19	ERDS2TJ102	1kΩ	1
	R20, 21 △	ERD2FCVG220	22Ω, 1/4W, Fuse Type	2
	R22	ER0S2CKF1802	18kΩ, ±1%	1
○	R23	ER0S2CKF1101	1.1kΩ, ±1%	1
	R24	ERDS2TJ103	10kΩ	1
	R25	ERDS2TJ102	1kΩ	1
	R27	ERDS2TJ103	10kΩ	1
	R28	ERDS2TJ472	4.7kΩ	1
	R29	ERDS2TJ103	10kΩ	1
	R30	ERDS2TJ472	4.7kΩ	1
	R31, 32	ERDS2TJ103	10kΩ	2
	R33	ERDS2TJ472	4.7kΩ	1
○	R34 △	ERQ2CJP6R8S	6.8Ω, 2W, Fuse Type	1
○	R36, 37 △	ERD25FVJ471	470Ω1/4W, Flame-Proof	2
	R40, 41	ERDS2TJ683	68kΩ	2
	R44, 45	ERDS2TJ104	100kΩ	2
	R46	ERDS2TJ682	6.8kΩ	1
	R47	ERDS2TJ102	1kΩ	1
	R48	ERDS2TJ124	120kΩ	1
	R50	ERDS2TJ332	3.3kΩ	1
	R51	ERDS2TJ154	150kΩ	1
	R54	ERDS2TJ472	4.7kΩ	1
	R55	ERDS2TJ154	150kΩ	1
	R61	ERDS2TJ682	6.8kΩ	1
	R62	ERDS2TJ102	1kΩ	1
	R63	ERDS2TJ124	120kΩ	1
	R65	ERDS2TJ332	3.3kΩ	1
	R66	ERDS2TJ154	150kΩ	1
	R69	ERDS2TJ472	4.7kΩ	1
	R70	ERDS2TJ154	150kΩ	1
	R76	ERDS2TJ222	2.2kΩ	1
	R77	ERDS2TJ823	82kΩ	1
	R78	ERDS2TJ273	27kΩ	1
	R79	ERDS2TJ223	22kΩ	1
	R80	ERDS2TJ222	2.2kΩ	1
	R81	ERDS2TJ823	82kΩ	1
	R82	ERDS2TJ273	27kΩ	1
	R83	ERDS2TJ223	22kΩ	1
	R84	ERDS2TJ472	4.7kΩ	1
	R85	ERDS2TJ104	100kΩ	1
	R86, 87	ERDS2TJ102	1kΩ	2
	R88, 89	ERDS2TJ222	2.2kΩ	2
	R90, 91	ERDS2TJ102	1kΩ	2
○	R92	ERTD2ZHJ103	10kΩ	1
	R93, 95 △	ERD2FCVG101	100Ω, 1/4W, Fuse Type	2
	R97, 98	ERDS2TJ471	470Ω	2
	R99, 100	ERDS2TJ331	330Ω	2
	R101 △	ERD25FVJ4R7	4.7Ω, 1/4W, Flame-Proof	1
	R102	ERDS2TJ472	4.7kΩ	1
	R103	ERDS2TJ104	100kΩ	1
	R104, 105	ERDS2TJ102	1kΩ	2
	R106, 107	ERDS2TJ222	2.2kΩ	2
	R108, 109	ERDS2TJ102	1kΩ	2
○	R110	ERTD2ZHJ103	10kΩ	1
	R111, 113 △	ERD2FCVG101	100Ω, 1/4W, Fuse Type	2
	R115, 116	ERDS2TJ471	470Ω	2
	R117, 118	ERDS2TJ331	330Ω	2
	R119 △	ERD25FVJ4R7	4.7Ω, 1/4W, Flame-Proof	1
	R120	ERDS2TJ472	4.7kΩ	1
	R121	ERDS2TJ104	100kΩ	1
	R122, 123	ERDS2TJ102	1kΩ	2
	R124, 125	ERDS2TJ222	2.2kΩ	2
	R126, 127	ERDS2TJ102	1kΩ	2
○	R128	ERTD2ZHJ103	10kΩ	1
	R129, 131 △	ERD2FCVG101	100Ω, 1/4W, Fuse Type	2
	R132	ERDS2TJ472	4.7kΩ	1
	R133, 134	ERDS2TJ471	470Ω	2
	R135, 136	ERDS2TJ331	330Ω	2
	R137 △	ERD25FVJ4R7	4.7Ω, 1/4W, Flame-Proof	1
	R138	ERDS2TJ472	4.7kΩ	1
	R139	ERDS2TJ104	100kΩ	1
	R140, 141	ERDS2TJ102	1kΩ	2
	R142, 143	ERDS2TJ222	2.2kΩ	2
	R144, 145	ERDS2TJ102	1kΩ	2
○	R146	ERTD2ZHJ103	10kΩ	1
	R147, 149 △	ERD2FCVG101	100Ω, 1/4W, Fuse Type	2
	R151, 152	ERDS2TJ471	470Ω	2
	R153, 154	ERDS2TJ331	330Ω	2
	R155 △	ERD25FVJ4R7	4.7Ω, 1/4W, Flame-Proof	1
	R156, 159	ERDS2TJ184	180kΩ	2
	R160	ERDS2TJ154	150kΩ	1
	R161	ERDS2TJ220	22Ω	1
	R162	ERDS2TJ102	1kΩ	1
	R163	ERDS2TJ154	150kΩ	1
	R164	ERDS2TJ220	22Ω	1
	R165	ERDS2TJ102	1kΩ	1
	R166, 167 △	ERD2FCVJ4R7	4.7Ω, 1/4W, Fuse Type	2
○	R168, 169 △	ERF5ZXJ220	22Ω, 5W, Flame-Proof	2
	R170, 171	ERDS2TJ103	10kΩ	2
	R176	ERDS2TJ473	47kΩ	1
	R177	ERDS2TJ182	1.8kΩ	1
	R180	ERDS2TJ473	47kΩ	1
	R181	ERDS2TJ182	1.8kΩ	1
	R184	ERDS2TJ473	47kΩ	1
	R185	ERDS2TJ182	1.8kΩ	1
	R188	ERDS2TJ473	47kΩ	1
	R189	ERDS2TJ182	1.8kΩ	1
○	R190 △	ERD25FVJ471	470Ω, 1/4W, Flame-Proof	1
	CAPACITORS			
	C1 △	ECQE1A104M6	0.1μF, 125V	1
	C2, 3	ECQS1JP103EA	10000μF, 63V	2
	C6~9	ECEA1HKA010	1μF, 50V	4
	C10~12	ECRF1H104ZF	0.1μF	3
	C19, 20	ECCF1H100D	10pF	2
	C21	ECQG1H472KZ	0.0047μF	1
	C22	ECQV1H474JZ	0.47μF	1

JACK JACK CIRCUIT

Ref. No.	Part No.	Description	P/S
C23	ECQB1H333JF	0.033μF	1
C24	ECQV1H683JM	0.068μF	1
C25	ECQG1H152KZ	0.0015μF	1
C27	ECQG1H332KZ	0.0033μF	1
C28	ECCF1H471J	470pF	1
C31	ECQG1H472KZ	0.0047μF	1
C32	ECQV1H474JZ	0.47μF	1
C33	ECQB1H333JF	0.033μF	1
C34	ECQV1H683JM	0.068μF	1
C35	ECQG1H152KZ	0.0015μF	1
C37	ECQG1H332KZ	0.0033μF	1
C38	ECCF1H471J	470pF	1
C41, 42	ECQB1H223JF	0.022μF	2
C43	ECQV1H104JM	0.1μF	1
C44	ECQB1H103JF	0.01μF	1
C45, 46	ECQB1H223JF	0.022μF	2
C47	ECQV1H104JM	0.1μF	1
C48	ECQB1H103JF	0.01μF	1
C49	ECQB1H473JF	0.047μF	1
C51	ECCF1H220J	22pF	1
C52	ECQB1H103JF	0.01μF	1
C53	ECQV1H104JM	0.1μF	1
C54	ECRF1H104ZF	0.1μF	1
C55	ECEA1HKN010	1μF, 50V	1
C57	ECCF1H220J	22pF	1
C58	ECQB1H103JF	0.01μF	1
C59	ECQV1H104JM	0.1μF	1
C60	ECRF1H104ZF	0.1μF	1
C61	ECQB1H473JF	0.047μF	1
C63	ECCF1H220J	22pF	1
C64	ECQB1H103JF	0.01μF	1
C65	ECQV1H104JM	0.1μF	1
C66	ECRF1H104ZF	0.1μF	1
C67	ECEA1HKN010	1μF, 50V	1
C69	ECCF1H220J	22pF	1
C70	ECQB1H103JF	0.01μF	1
C71	ECQV1H104JM	0.1μF	1
C72	ECRF1H104ZF	0.1μF	1
C73~76	ECEA1JU4R7	4.7μF, 63V	4
C77, 78	ECCF1H220J	22pF	2
C79	ECEA50Y10	10μF, 50V	1
C80	ECEA50Y15	15μF, 50V	1
C81	ECEA50Y10	10μF, 50V	1
C82	ECEA50Y15	15μF, 50V	1
C95, 96	ECRF1H104ZF	0.1μF	2

ACP AC POWER SUPPLY CIRCUIT

Ref. No.	Part No.	Description	P/S
COIL & LINE FILTER			
L1 △	SLTGLF4	Line Filter	1
FUSES			
F1 △	XBA2C63TB0	6.3A, 250V, [X] [LS] [F] [D] [T]	1
F1 △	XBA1C63NU100	6.3A, 125V, [A] [K] [YA]	1
F2 △	XBA2C40TB0	T4A, 250V, except [A] [TL] [K]	1
CAPACITORS			
C1 △	ECKCVA1472MF	4700pF, Line Capacitor	1
C2 △	ECQU2A104MN	0.1μF, 250V, Across-the Line Capacitor	1

Ref. No.	Part No.	Description	P/S
INTEGRATED CIRCUITS			
S IC1	SVIGM5218L	Operational Amplifier	1
COILS			
L1	QLQGT3T150SA	Coil	1
L2, 3	QLQGT2T150SA	Coil	2
JACKS			
JK1, 2	SJJG100A	Headphones	2
JK3, 4	QJJG003AA	LINE OUT	2
JK5	SJJG210A	MIC	1
VARIABLE RESISTORS			
VR1	EWHD5A576A54	50kΩ A,	1
WIRES			
W1	QEXG01001RA	Wire	1
○ W2	QEXGRA01007C	Wire	1
RESISTORS			
○ R1~4 △	ERD1ANJP680	68Ω, 1W, Flame-Proof	4
R5, 6	ERDS2TJ222	2.2kΩ	2
R7, 8	ERDS2TJ821	820Ω	2
R9	ERDS2TJ224	220kΩ	1
R10	ERDS2TJ103	10kΩ	1
R11	ERDS2TJ224	220kΩ	1
R12	ERDS2TJ103	10kΩ	1
R13	ERDS2TJ224	220kΩ	1
R14	ERDS2TJ102	1kΩ	1
R15, 16 △	ERD2FCVJ4R7	4.7Ω, 1/4W, Fuse Type	2
CAPACITORS			
C1, 2	ECKF1E473ZV	0.047μF	2
C4, 5	ECQG1H222KZ	0.0022μF	2
C7	ECCF1H471J	470pF	1
C9	ECEA1HKN010	1μF, 50V	1
C10	ECCF1H220J	22pF	1
C11	ECKF1E473ZV	0.047μF	1
C12	ECCF1H220J	22pF	1
C13	ECEA1HKN010	1μF, 50V	1
C14	ECKF1E473ZV	0.047μF	1
C15, 16	ECEA1CKA470	47μF, 16V	2
C17~19	ECRF1H104ZF	0.1μF	3

NW NETWORK CIRCUIT

Ref. No.	Part No.	Description	P/S
RESISTORS			
R1, 2 △	ERF5ZXJ100	10Ω, 5W, Flame-Proof	2
CAPACITORS			
C1, 2	ECEA50Y1	1μF, 50V	2

MKB1 MANUAL KEYBOARD 1 CIRCUIT

Ref. No.	Part No.	Description	P/S
INTEGRATED CIRCUITS			
IC1	D65022CW-285	Gate Array	1
S IC3	SVIGM5218L	Operational Amplifier	1
DIODES			
D49~122	MA165	Diode	74
OSCILLATOR			
X1	EF0EC8004A5	8MHz, Ceramic Oscillator	1
SEMI-FIXED RESISTOR			
VR1	EVSG0E1B223A	22kΩ B,	1
RESISTORS			
R1	ERDS2TJ102	1kΩ	1
R3	ERDS2TJ103	10kΩ	1
R4	ERDS2TJ102	1kΩ	1
R5~7	ERDS2TJ472	4.7kΩ	3
R50	ERDS2TJ471	470Ω	1
CAPACITORS			
C1	ECRF1H104ZF	0.1μF	1
C2	ECEA0JU470	47μF, 6.3V	1
C3	ECRF1H104ZF	0.1μF	1
○ C4.5	ECCF1H151J	150pF	2
C7	ECKF1E473ZV	0.047μF	1

MKB2 MANUAL KEYBOARD 2 CIRCUIT

Ref. No.	Part No.	Description	P/S
DIODES			
D25~48	MA165	Diode	24
COMPONENT COMBINATION			
Z1	EXBPI8472JM	4.7kΩ×8	1

PKB PEDAL KEYBOARD CIRCUIT

Ref. No.	Part No.	Description	P/S
INTEGRATED CIRCUITS			
IC1	MN1280R	Reset IC	1
○ IC2	D78C11ACWF26	8 bit Microcomputer	1
OSCILLATOR			
X1	QSXG1A1500A	15MHz, Quartz Oscillator	1
COMPONENT COMBINATIONS			
Z1~3	EXBPI8332JM	3.3kΩ×8	3
COILS			
L1~3	QLQGT3T150SA	Coil	3
L4, 5	QLQGT1B800MA	Coil	2

Ref. No.	Part No.	Description	P/S
WIRE			
W1	QEXG01001RA	Wire	1
RESISTORS			
R1	ERDS2TJ102	1kΩ	1
R10	ERDS2TJ103	10kΩ	1
R11, 12	ERDS2TJ472	4.7kΩ	2
R15, 16	ERDS2TJ103	10kΩ	2
R18	ERDS2TJ472	4.7kΩ	1
R19~21	ERDS2TJ103	10kΩ	3
R22 △	ERD2FCG101	100Ω, 1/4W, Fuse Type	1
R23	ERDS2TJ184	180kΩ	1
CAPACITORS			
C1	ECRF1H104ZF	0.1μF	1
C4	ECEA0JKA101	100μF, 6.3V	1
C5	ECRF1H104ZF	0.1μF	1
C6	ECEA0JKA470	47μF, 6.3V	1
C7~9	ECRF1H104ZF	0.1μF	3

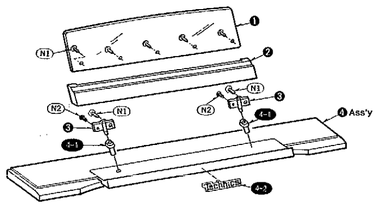
EXP EXPRESSION CIRCUIT

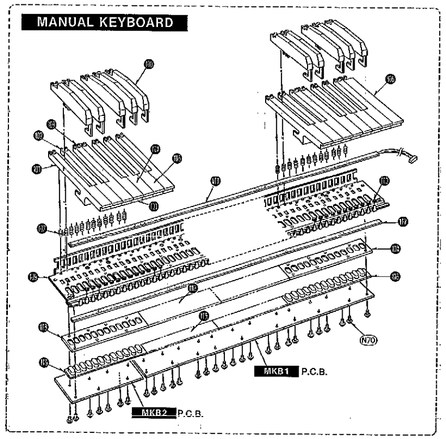
Ref. No.	Part No.	Description	P/S
CDS			
CS1	SVEG5	Light Sensitive Device	1

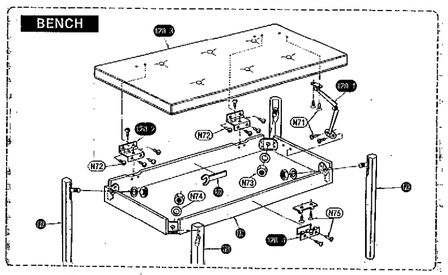
■ WIRING PARTS

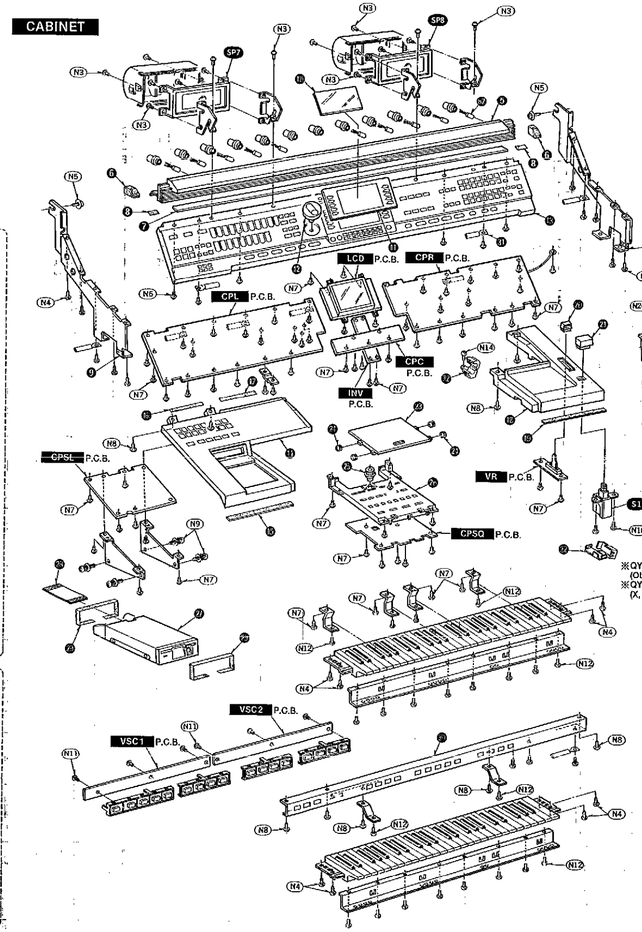
Ref. No.	Part No.	Description	P/S
INTEGRATED CIRCUITS			
○ W1	QEXGSS15095A	Connector with Wire	1
○ W2	QEXGSA07035A	Connector with Wire	1
○ W3	QEXGSA06035A	Connector with Wire	1
○ W4	QEXGSA12035A	Connector with Wire	1
○ W5	QEXGSS16050A	Connector with Wire	1
○ W6	QEXGST16160A	Connector with Wire	1
○ W7	QEXGSA10060A	Connector with Wire	1
○ W8	QEXGSS16025A	Connector with Wire	1
○ W9	QEXGSA06010A	Connector with Wire	1
○ W10	QEXGSA06030A	Connector with Wire	1
○ W11	QEXGSA04015A	Connector with Wire	1
○ W12	QEXGSA04025B	Connector with Wire	1
○ W13	QEXGSA10035A	Connector with Wire	1
○ W14	QEXGSS13110A	Connector with Wire	1
○ W15	QEXGEH04055B	Connector with Wire	1
○ W16	QEXGVH09210B	Connector with Wire	1
○ W17	QEXGSS10065A	Connector with Wire	1
○ W18	QEXGEH03090B	Connector with Wire	1
○ W19	QEXGVH07025C	Connector with Wire, [X] [F] [XS] [D] [T]	1
W20	QEXGVH03105B	Connector with Wire	1
○ W21	QEXGZA06115A	Connector with Wire	1
W22	QEXGLT04075B	Connector with Wire	1
W23	QEXG04005LSA	Connector with Wire	1
○ W24	QEXGEL06045B	Connector with Wire	1
○ W25	QEXGVH08105C	Connector with Wire	1
○ W26	QEXGEL06150B	Connector with Wire	1
○ W27	QEXGEL06058B	Connector with Wire	2

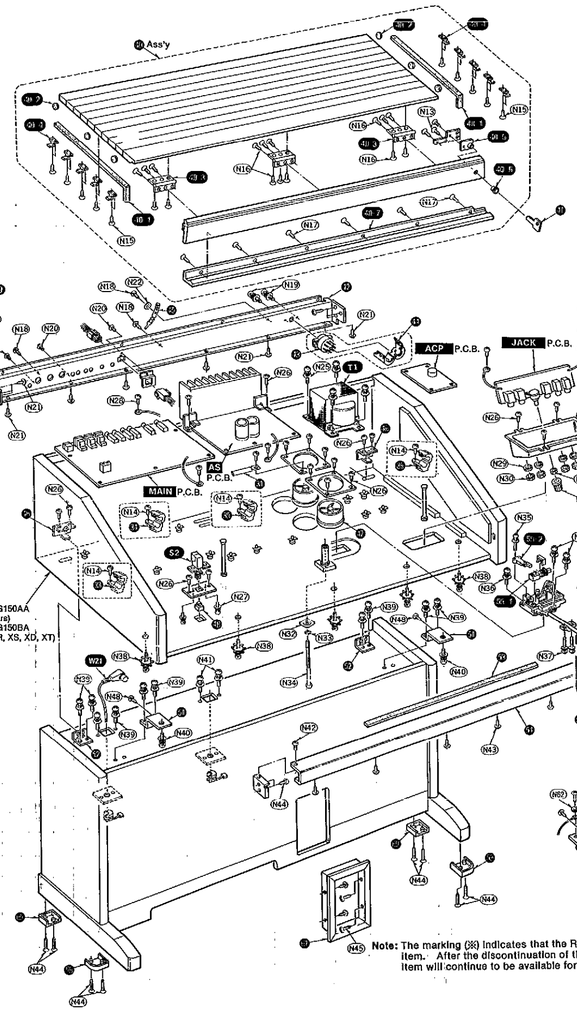
CABINET PARTS LOCATION

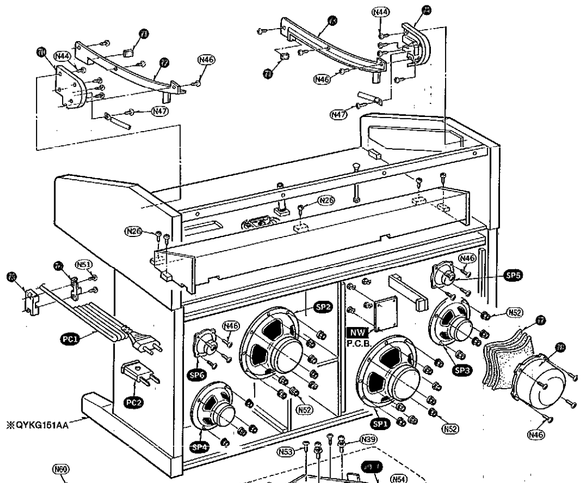


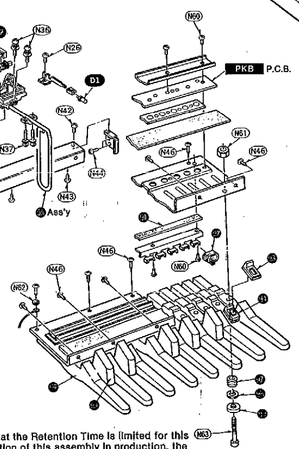


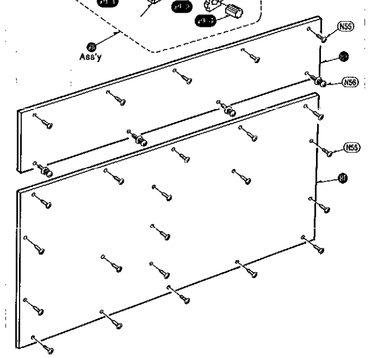












Note: The marking (36) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time.

REPLACEMENT PARTS LIST.....Cabinet and Chassis Parts

Notes:

1. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retension period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention.
   After the end of this period, the assembly will no longer be available.
2. ○ mark are new parts.
3. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
4. For part No. with area mark, check the area when placing an order.
5. The raw material indication for synthtic resin
   In order to facilitate classification of parts of synthetic resin manufacture and to promote the recycling of natural resources, a raw material symbol for such parts is indicated in the Ref. No./Material column.

■ CABINET & CHASSIS PARTS

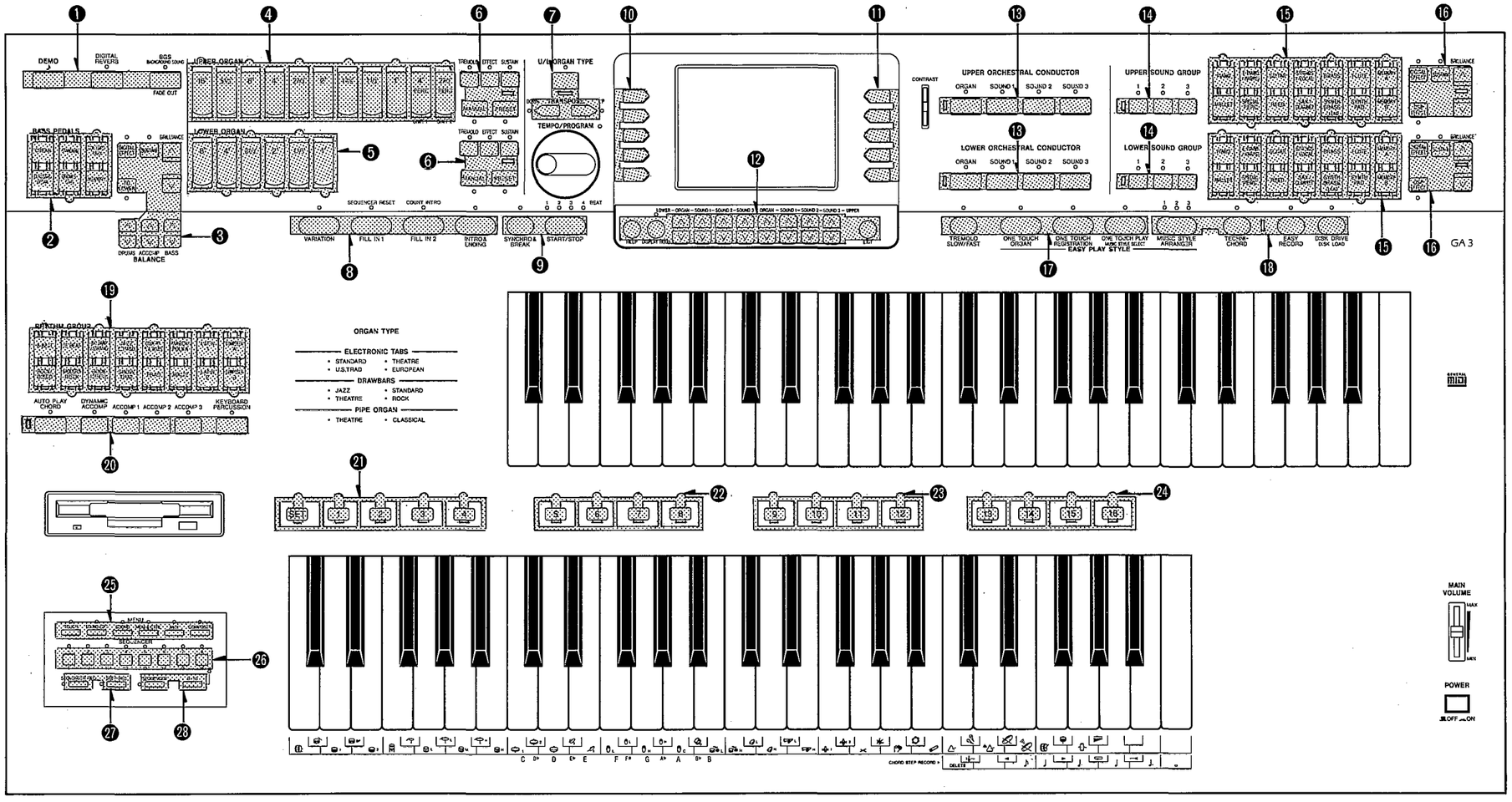
Ref. No.		Part No.	Description	P/S
		SWITCHES		
○	S1 ⚠	ESB8273V	Power Switch	1
	S2 ⚠	SSHG1050A	Power Switch	1
		DIODES		
	D1	LN29RP	LED, Power Indicator	1
		SPEAKERS		
	SP1, 2	EAS30PL149A	30cm, 8Ω	2
	SP3, 4	SASG16PL03-F	16cm, 8Ω	2
	SP5, 6	EAS65PH31A3	6.5cm, 8Ω	2
	SP7, 8	EAS15S06A	6×13cm, 16Ω	2
		TRANSFORMER		
○	T1 ⚠	QTPG1S010A	Power Transformer, M MC XM	1
○	T1 ⚠	QTPG1Q004A	Power Transformer, Others	1
○	T1 ⚠	QTPG1Q005A	Power Transformer, X XR XS XD XT	1
		POWER CORD & PLUG		
	PC1 ⚠	SJAG24	Power Cord, Others	1
○	PC1 ⚠	QJAG012AA	Power Cord, EK XD	1
○	PC1 ⚠	QJAG015AA	Power Cord, XL XR	1
○	PC1 ⚠	QJAG017AA	Power Cord, ~~M~~ ~~MC~~ ~~XM~~	1
	PC2 ⚠	SJP5213-1	Attachment Plug, X XT	1
		CABINET PARTS		
○	1	QGAG2013AA	Clear Panel, Music Rack	1
○	2	QGAG1027AA	Ornament	1
	3	SBLG230B	Stay	2
○	4	QKQGA070AA	Top Cover Ass'Y	1
	4-1	QMRG7021AA	Sleeve	2
	4-2	SGBG140A	Badge	1
○	5	QGKG0014AB	Ornament	1
	6 PS	QMRG7006AA	Cap	2
	7	QMRG7005AA	Lamp Cover	1
	8	SHSG1830A	Felt	2
○	9	QMFG1031A	Felt	2
○	10	QKWG013AA	LCD Panel	1
○	11 PS	QGPG0065AA	Center Panel	1
○	12	SBNG4061A	Dial Wheel	1
○	13 PS	QGPG0063BB	Control Panel	1
○	14 PS	QGPG0064AB	Lower Control Panel, Left	1

Ref. No.		Part No.	Description	P/S
	15	QMFG4001AA	Felt	1
	16	SHSG6050A	Felt	1
	17	QMFG4103AA	Felt	1
○	18 PS	QGPG0003BB	Lower Control Panel, Right	1
○	19	QMFG4002AA	Felt	1
	20	SBNG7031A	Knob	1
	21	SBCG110B	Button, Power Switch	1
	22 PP	SHRG8390A	Cover, Power SW.	1
○	23	QGPG0059AC	Subpanel Frame	1
	24	SHGG9053A	Rubber	4
	25	RDG5782ZB	Gear	1
○	26 PS	QGPG0058AD	Subpanel	1
	27	QAUG006AA	DDR Drive unit	1
○	28	QEUGMQW17D	Flat Cable	1
	29	QMFG4103AA	Felt	2
○	30	QGKG0110AA	Ornament, Keyboard	1
	31	SUWG219	Binder	10
	32	QLZG006A	Core	1
	33~36	QLZG006A	Core, M MC XM EZ	4
○	40	QKQGF015AA	Sliding Cover Ass'Y	1
○	40-1	QMFG1089AA	Felt	2
	40-2	SHSG119	Felt	6
	40-3	SBHG6007-1	Hinge	3
	40-4	SHRG9930A	Catch, Guide Rail	10
	40-5	SBEG31A	Lock	1
	40-6	SBEG40A	Staple	1
○	40-7	QGKG0010AB	Ornament	1
	41	SBEG60A	Key	1
○	42	QGKG0108AA	Jack Panel, Others	1
○	42	QGKG0108BA	Jack Panel, X XR XS XD XT	1
	43 ⚠	ESE37209	Voltage Selector, X XR XS XD XT	1
	44	SUV453	Switch Cover, X XR XS XD XT	1
	45 PP	SHRG1030A	Cord Band	1
	46	SUWG3001A	Bracket	2
	47	SYE1128-4	Fan	2
	48	SBCG20I	Button	1
○	49 PS	SMKG1566A	Jack Panel	1
	50	SBNG4010A	Mic Volume Knob	1
○	51	SUWG3033A	Bracket	2
	52	SUWG3020A	Bracket	2
	53	SHSG3050A	Felt	1
○	54	QKSGE013AA	front Panel	1
	55	SXVG3031A	Knee Lever	1
	55-1	SSHG1020A	Push Switch	1
	55-2	SSLG1005A	Leaf Switch	1
○	58 PP	QMRG7054AA	Foot	1
○	59 PP	QMRG7055AA	Foot	1
○	60 PP	SHRG2250A	Foot	2
	61 PS	SGXG1100A	Ornament, Expression	1

Ref. No.		Part No.	Description	P/S
	70 PS	SKEG7650A	Guide Rail	1
	71	SHSG3571A	Felt	2
	72 PS	SKEG7670A	Guide Rail	1
	73 PS	SKEG7660A	Guide Rail	1
	74 PS	SKEG7640A	Guide Rail	1
	75 PP	SHRG1110A	Cord Clamper	1
	76 PP	SHRG1120A	Cord Clamper	1
	77	SHSG9140A	Sound Absorbing Material	2
	78 PP	SHRG8130A	Speaker Cover	2
	79	SXVG6030A	Expression Pedal Ass'y	1
	79-1	SSHG14	Foot Switch	2
	79-2	XAMR55P	Lamp	1
	79-3	SHGG908	Lamp Holding Rubber	1
	79-4	RJS205ZA	Socket	1
○	80	QKQGD053AA	Rear Board (Upper)	1
○	81	QKUG1032AA	Rear Board (Lower)	1
	82	XAMR90S770	Lamp	10
		PEDAL KEYBOARD		
	91	SHSG1600B	Felt	1
	92	SHSG1460A	Felt	14
	93	SGXG1390A	Ornament	1
	94 ABS	STBG2310A	Full-Base Pedal	1
	95 ABS	STBG2052A	Black Key	5
	96 ABS	STBG1164A	Long Key (Brown)	8
	97	SUSG180A	Spring	14
	98	SHGG8130A	Rubber	14
	99	SHRG9240A	Spacer	14
		MANUAL KEYBOARD		
	100 AS	STBG2071A	Black Key	40
	101 AS	STBG1101A	White Key (C and F Key)	16
	102 AS	STBG1111A	White Key (D Key)	8
	103 AS	STBG1121A	White Key (E and B Key)	16
	104 AS	STBG1131A	White Key (G Key)	8
	105 AS	STBG1141A	White Key (A Key)	8
	106 AS	STBG1151A	White Key (Top Octave C Key)	2
	107	SUSG271A	Spring	98
○	109	QMWG3011AA	Chassis	2
	110	SHGG9052A	Key Guide Rubber	98
○	111	QMWG5001AA	After Sensor	2
○	112	QMFG1137BA	Felt	2
	113 ABS	QMWG8031DA	Spacer (12 pcs. on one)	6
	114 ABS	QMWG8030CA	Spacer (13 pcs. on one)	2
	115	QMWG6010BA	Rubber Switch (12 pcs. on one)	6
	116	QMWG6009BA	Rubber Switch (13 pcs. on one)	2
		BENCH except EK		
○	120	QKQGA074AAZ	Top Cover Ass'y	1
	120-1	SBLG70A	Stay	1
	120-2	SBHG50B	Hinge	2
○	120-3	QKQGA075AAZ	Sheet	1
	120-4	SBHG40A	Latch	1
	121	SBEG190A	Spanner	1
○	123	QKQGZ090AA	Leg	4

Ref. No.	Part No.	Description	P/S
	SCREWS & WASHERS		
N1	XTT4+12AFZ	Screw	7
N2	XTB3+12AFZ	Screw	2
N3	XTW3+10T	Screw	16
N4	XTB4+12A	Screw	18
N5	SNEG2400A	Screw with Washer	2
N6	XTB26+6J	Screw	6
N7	XTW3+10Q	Screw	81
N8	XTT4+10AFZ	Screw	12
N9	XYN3+F6	Screw with Washer	4
N10	XTBS26+10J	Screw	2
N11	XTW3+8T	Screw	6
N12	XTB3+5C	Screw	22
N13	XTS3+12A	Screw	3
N14	XTB3+10A	Screw	5
N15	XTS4+12A	Screw	10
N16	XTS35+12A	Screw	16
N17	XTS3+10AFVC	Screw	6
N18	XTB35+12AFVC	Screw	3
○ N19	XYN3+F8FVC	Screw, X XR XS XD XT	2
N20	XTW3+10JFVC	Screw	3
N21	XTT35+10AFVC	Screw	12
○ N22	XWG3F13FZ	Washer	1
N25	XYN4+F20	Screw with Washer	4
N26	XTB35+12A	Screw	24
○ N27	XSN3+6	Screw with Washer	2
N28	SNEG2660A	Screw	5
N29	SNEG770A	Washer	5
N30	XNS12FZ	Nut	5
N31	SNE4021-1	Nut	1
N32	XWA5BFZ	Washer	1
N33	SNEG150B	Washer	1
○ N34	SNEG960B	Screw	1
N35	XTN2+10FFX	Screw	1
N36	XYN3+F12	Screw with Washer	3
N37	XYN3+F16FZ	Screw with Washer	2
N38	QHDG006AB	Screw with Washer	5
N39	XYN4+F20FZ	Screw with Washer	12
○ N40	QHDG030AA	Screw with Washer	4
N41	QHDG004AA	Screw	2
N42	XTB3+8BFVC	Screw	2
N43	XTT35+10AFVC	Screw	6
N44	XTB35+20A	Screw	22
N45	XTB3+14AFVC	Screw	4
N46	XTT4+14A	Screw	35
N47	XTV3+10G	Screw	2
N48	XTB35+14A	Screw	2
N51	XTB35+25A	Screw	2
N52	SNE499-1	Nut	24
N53	XTT4+16AFZ	Screw	2
N54	XTN26+6B	Screw	2
N55	XTT4+30AFVC	Screw	24
N56	XYN4+F12FVC	Screw with Washer	4
N60	XTB3+6B	Screw	11
N61	XNG5BS	Nut	14
N62	XWA4B	Washer	1
N63	SNEG360A	Screw	14
N70	XTW3+10TFZ	Screw	60
N71	XTS3+14A	Screw	4
N72	XTB35+14AFVC	Screw	10
N73	XNH10G	Nut	4
N74	XWB10B	Washer	4
N75	XTS3+14AFVC	Screw	4

■ BUTTON

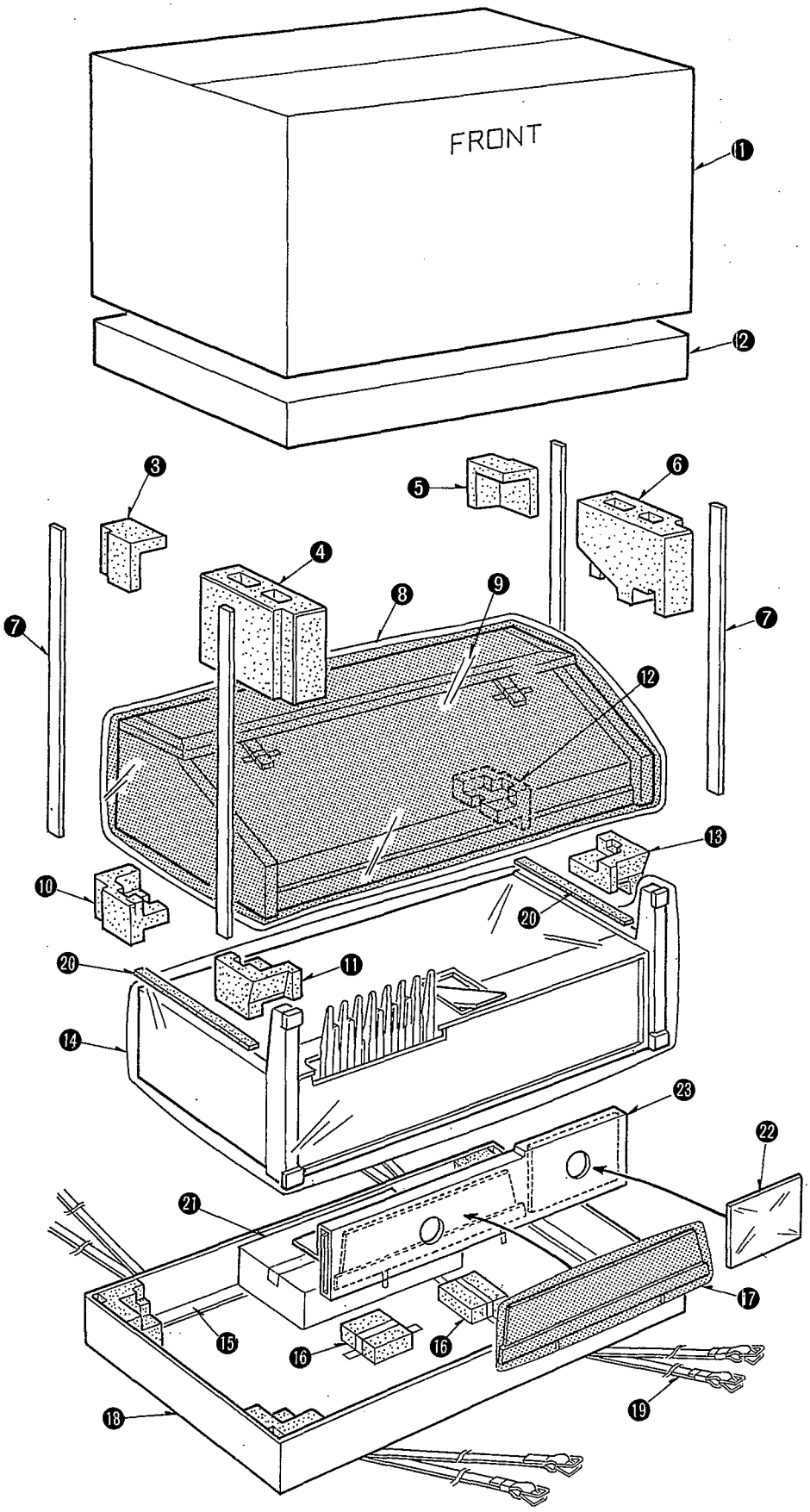


■ BUTTON

Ref. No.	Part No.	Description	P/S
	BUTTON		
○ 1	QGUG1240AA	Button	1
○ 2	QGUG1278CA01	Button	1
○ 3	QGUG1242AA01	Button	1
○ 4	QGUG1279AA01	Button	1
○ 5	QGUG1279CA01	Button	1
○ 6	QGUG1243AA01	Button	2
○ 7	QGUG1244AA	Button	1
○ 8	QGUG1245AA	Button	1
○ 9	QGUG1246AA	Button	1
○ 10	QGUG1252AA	Button	1
○ 11	QGUG1253AA	Button	1
○ 12	QGUG1249AA01	Button	1
○ 13	QGUG1250AA	Button	2
○ 14	QGUG1251AA	Button	2

Ref. No.	Part No.	Description	P/S
○ 15	QGUG1278BA01	Button	2
○ 16	QGUG1241AA01	Button	2
○ 17	QGUG1247AA	Button	1
○ 18	QGUG1248AA	Button	1
○ 19	QGUG1278AA01	Button	1
○ 20	QGUG1254AA	Button	1
○ 21	QGUG1281AA01	Button	1
○ 22	QGUG1281BA01	Button	1
○ 23	QGUG1281BA02	Button	1
○ 24	QGUG1281BA03	Button	1
25	QGUG1255AAK	Button	1
26	QGUG1256AAK	Button	1
27	QGUG1257AAK	Button	1
28	QGUG1257ABK	Button	1

PACKING



■ PACKING PARTS

Ref. No.		Part No.	Description	P/S
PACKING PARTS				
○ 1		QPGG0267AA	Carton Box	1
○ 2		QPGG0269AA	Top Case	1
○ 3	PS	QPNG0429AA	Pad	1
○ 4	PS	QPNG0427AA	Pad	1
○ 5	PS	QPNG0430AA	Pad	1
○ 6	PS	QPNG0428AA	Pad	1
○ 7		QPQG031AA	Prop	4
8	PE	SPHG220A	Polyethylene Bag	1
9	PE	SPHG620A	Protection Sheet	1
○ 10	PS	QPNG0433AA	Pad	1
○ 11	PS	QPNG0431AA	Pad	2
○ 12	PS	QPNG0434AA	Pad	1
○ 13	PS	QPNG0432AA	Pad	1
14	PE	SPHG770A	Polyethylene Bag	1
○ 15		QPQG029AA	Frame	1
16	PS	SPNG5749A	Pad	2
17	PE	SPHG2020A	Protection Sheet	1
○ 18		QPGG0271AAS	Bottom Case	1
19		SPSG40A	Band	4
○ 20	PE	QPHG077AA	Protection Sheet	4
○ 21		QPGG0248AA	Carton Box for Bench, except EK	1
○ 23		QPGG0273AA	Music Rack Cover	1

Ref. No.	Part No.	Description	P/S
OPERATING INSTRUCTION MANUAL			
○ 22	QQFGGA3AA	Operating instruction manual, Others	1
○ 22-1	[QQTG0246A	ENGLISH	1
○ 22	QQFGGA3CA	Operating instruction manual, M	1
○ 22-1	[QQTG0249A	ENGLISH	1
○ 22	QQFGGA3DA	Operating instruction manual, MC	1
○ 22-1	⎡ QQTG0246A	ENGLISH	1
○ 22-2	⎣ QQTG0250A	FRANCAIS	1
○ 22	QQFGGA3EA	Operating instruction manual, EZ EA	1
○ 22-1	[QQTG0251A	DEUTSCH	1
○ 22	QQFGGA3FA	Operating instruction manual, EW	1
○ 22-1	⎡ QQTG0246A	ENGLISH	1
○ 22-2	⎢ QQTG0250A	FRANCAIS	1
○ 22-3	⎣ QQTG0251A	DEUTSCH	1
○ 22	QQFGGA3GA	Operating instruction manual, EF	1
○ 22-1	[QQTG0250A	FRANCAIS	1
○ 22	QQFGGA3HA	Operating instruction manual, EH	1
○ 22-1	⎡ QQTG0250A	FRANCAIS	1
○ 22-2	⎢ QQTG0251A	DEUTSCH	1
○ 22-3	⎣ QQTG0252A	NERDERLANDS	1
○ 22	QQFGGA3JA	Operating instruction manual, EP XM	1
○ 22-1	⎡ QQTG0246A	ENGLISH	1
○ 22-2	⎣ QQTG0253A	ESPANOL	1
○ 22	QQFGGA3KA	Operating instruction manual, X	1
○ 22-1	⎡ QQTG0246A	ENGLISH	1
○ 22-2	⎢ QQTG0253A	ESPANOL	1
○ 22-3	⎣ QQTG0254A	中文	1
○ 22	QQFGGA3LA	Operating instruction manual, XT	1
○ 22-1	[QQTG0254A	中文	1

684

Printed in Japan
94033450 Ⓗ S.M./K.K.